

Site

Team

Evaluation

Prioritization

Decatur/Barding & Spawr J.F.
ILD984 766 373



CERCLA Report

EPA Region 5 Records Ctr.



305337



**Illinois Environmental
Protection Agency**

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1.0 INTRODUCTION

Decatur/Barding & Spawr Landfill was added to CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System) in April of 1988 after receiving complaints about the presence of drums on site and leachate leaving the site. In 1989 a CERCLA Preliminary Assessment was conducted. The investigation of the site continued in 1993 and 1994 when a CERCLA Screening Site Inspection was conducted at the site. Because it was found that environmental concerns still existed at the site, further investigation was conducted in the form of a Site Team Evaluation Prioritization (STEP), which is the subject of this report.

2.0 SITE INFORMATION

2.1 SITE DESCRIPTION

The Decatur/Barding & Spawr Landfill is an inactive landfill located on South Wyckles Road, south of U.S. Route 36, just west of Decatur in Macon County Illinois. The irregularly-shaped property occupies approximately 66 acres, although only approximately one-half of this area was filled. To the north the site is bordered by Cantrell Road and residential areas; to the east, the site is bordered by Wyckles road with the Macon County Conservation District Rock Springs Center beyond. To the south the site is bordered by a Decatur Sanitary District water treatment facility (along Wyckles Road) and the Sangamon River. Residential areas and woodland are situated to the west. Refer to Figures 2-1, 2-2, and 2-3. A 2-acre area in the northeast corner of the property is occupied by Standard Waste, a waste hauling and recycling business. The topography of the site is sloping and irregular, in part, because of landfilling activities. The site, for the most part, is covered with heavy vegetation consisting of tall grasses and trees. A map showing the topography within 4 miles of the site can be found in Appendix A, and a map showing the surface water route 15 miles downstream of the site can be found in Appendix B.

2.2 SITE HISTORY

Utilization of the property prior to landfilling operations is unknown. It was most likely vacant or utilized for farming. Landfilling operations began in the mid-1950s by Macon County Landfill Corporation, which leased the property from Junior L. Barding. This corporation, formed by several trash haulers, used the site for landfilling industrial and municipal wastes until

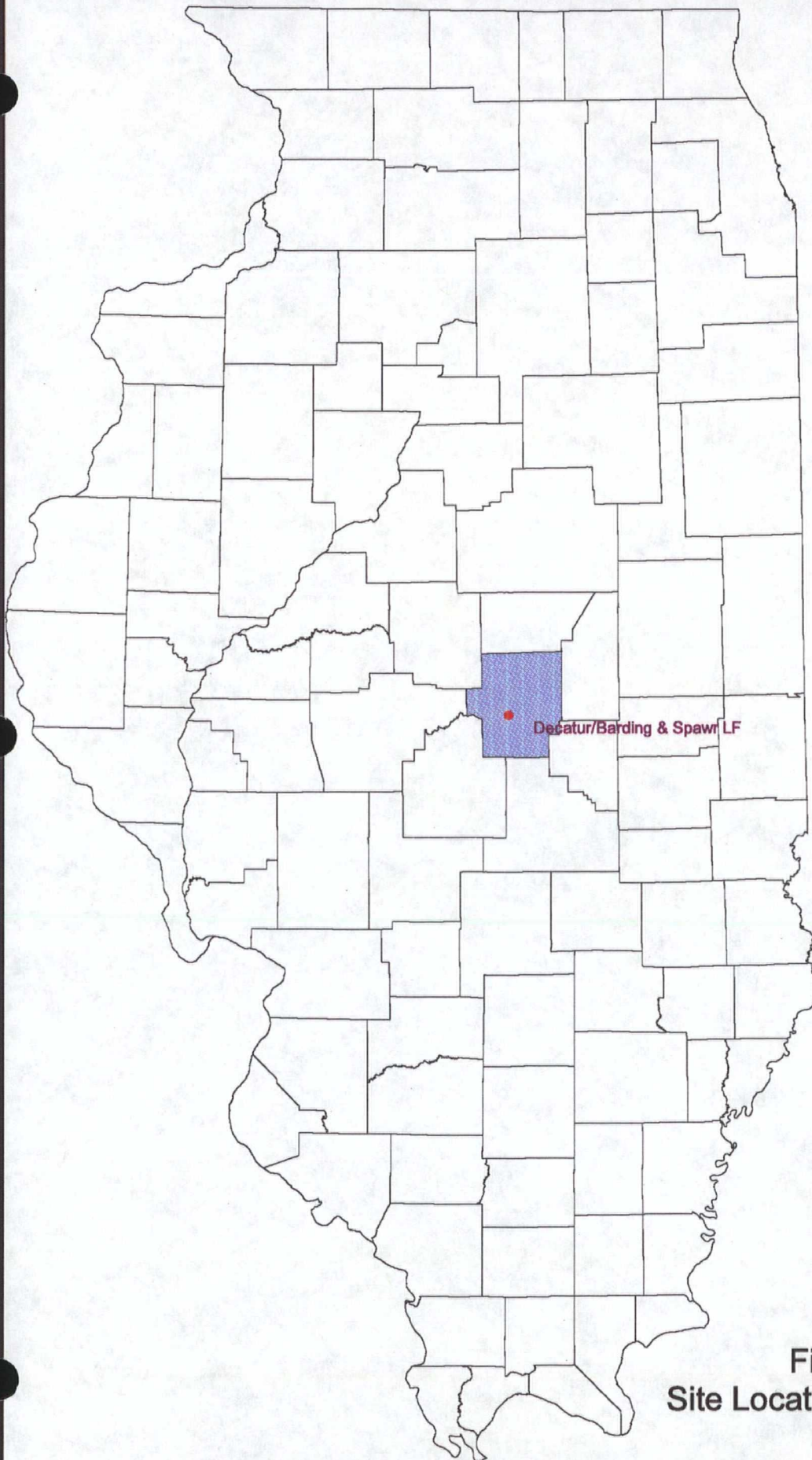
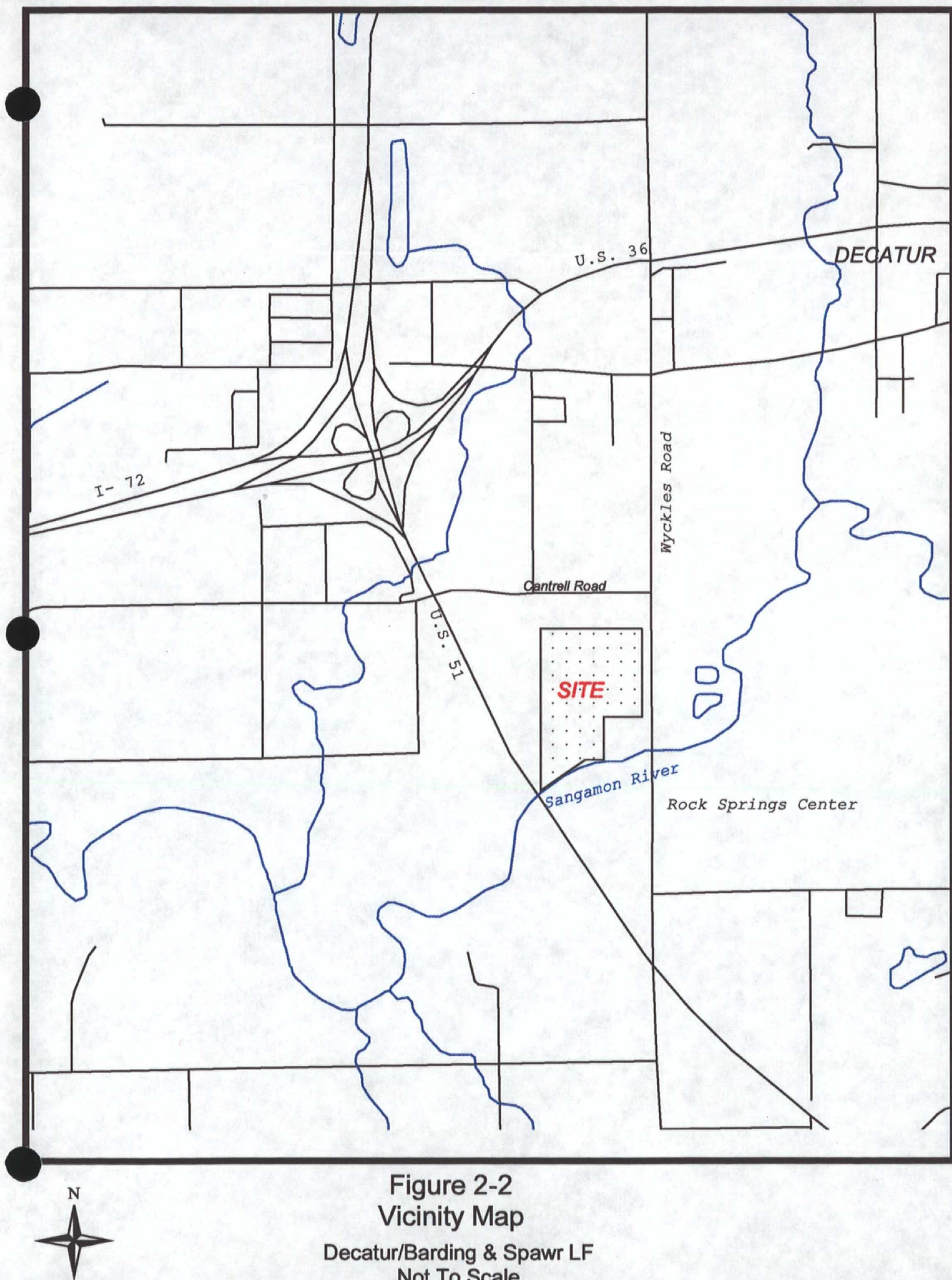
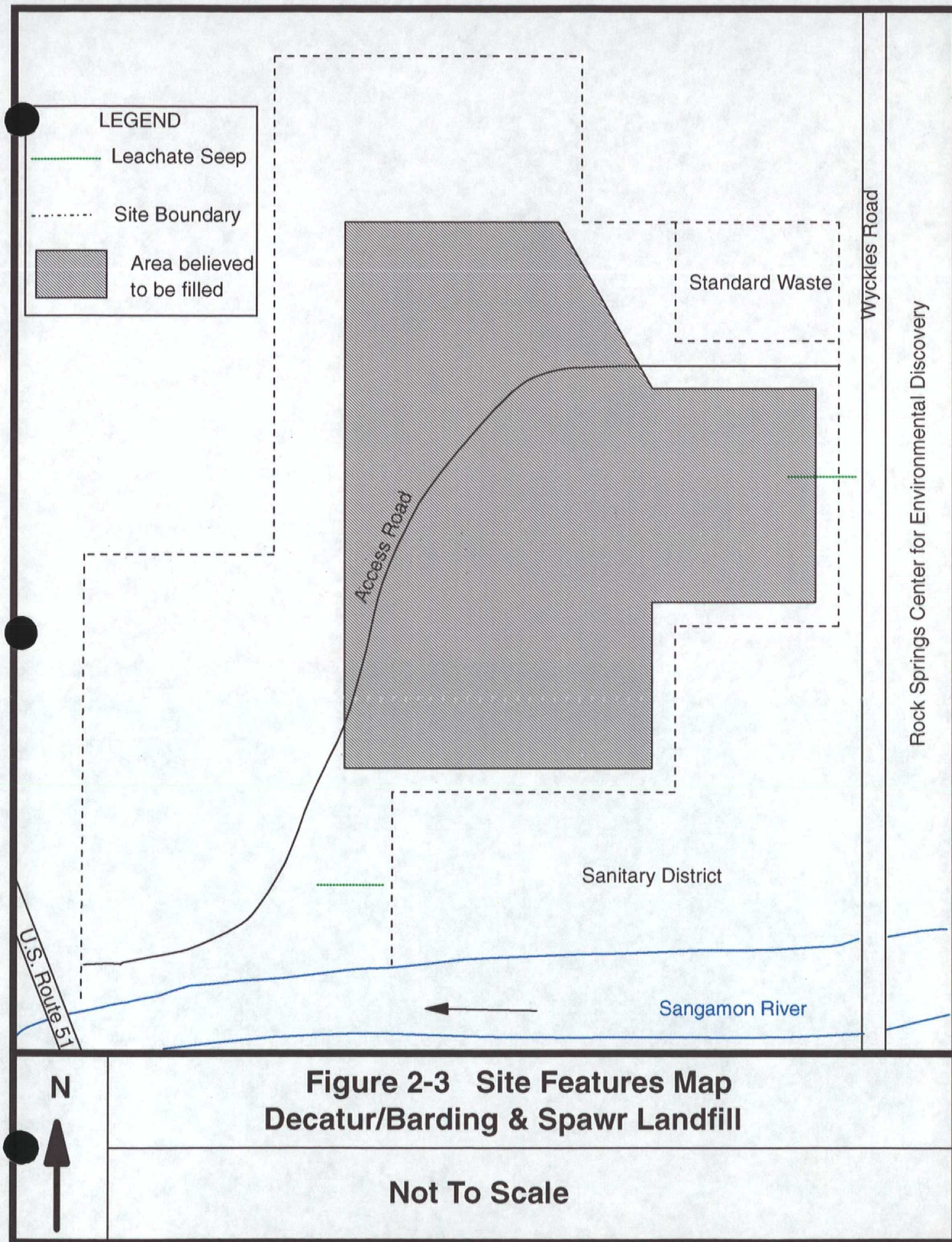


Figure 2-1
Site Location Within Illinois





the middle or late 1960s, when the landfilling operations moved across Highway 51. During its active life, the site was presumably operated as both an open dump and a landfill. A pit for disposing of liquid industrial waste was allegedly located onsite, near the center of the property, close to the haul road. The landfill has remained inactive since operations moved across the highway. From 1962 until 1980, James Spawr and Junior Barding Jr. operated a construction firm on two acres of the property. Since the 1980s they have operated Standard Waste at this location.

2.3 HISTORY WITH IEPA

The IEPA first became involved with the site in 1984, when the city of Decatur reported the presence of drums located on the site adjacent to the west border of the sanitary district property. Upon investigation, the IEPA discovered nineteen 55-gallon drums containing unknown liquid. Available file information does not indicate the fate of the drums, although they were not visibly apparent at the time of the STEP inspection.

The IEPA responded to various complaints concerning the facility in 1987. The first complaint was about bright orange water flowing along the west ditch of Wyckles Road, through a culvert to the conservation District property and eventually into the river. The resulting investigation discovered cover problems and leachate flow.

In October 1987, IEPA collected leachate samples and groundwater samples from the neighboring sanitary district property. The leachate was found to contain benzene,

chlorobenzene, and tetrachloroethylene in the parts per billions ranges. The groundwater was found to contain benzene, chlorobenzene, tetrahydrofuran, and benzothiazolone in parts per billion ranges.

Subsequently, the site was added to CERCLIS in April 1988, with a CERCLA Preliminary Assessment and Screening Site Inspection following. Other than these CERCLA activities, the IEPA has not conducted further activities at the site since 1987.

2.4 SITE REGULATORY STATUS

The Decatur/Barding & Spawr landfill began operations during the 1950s, and continued until the late 1960s, all prior to both IEPA existence and the Resource Conservation and Recovery Act.

3.0 FIELD ACTIVITIES AND ANALYTICAL RESULTS

3.1 INTRODUCTION

As part of the 1996 CERCLA STEP inspection, eight soil/sediment samples were collected in seven locations, and six groundwater samples were collected from four locations. The sampling was conducted in accordance with the previously prepared work plan, which was reviewed by U.S. EPA, Region 5 prior to initiation of sampling activities. During the sampling event, one change was made from the work plan, as sample X104 was not collected since soil screening revealed no organic vapors at this location. Photographs of the sample locations can be found in Appendix C.

3.2 SITE RECONNAISSANCE

On October 29, 1996 a reconnaissance of the site was conducted. This included a visual inspection of the site to determine site status, note predominant site features, identify possible sample locations and any safety concerns. The landfill was found to be inactive and covered with heavy vegetation. Leachate/runoff routes were noted at various locations throughout the site, particularly along Wyckles Road and around the perimeter of the sanitary district property. The old access road through the site was identified and followed to its end near Highway 51. Upon leaving the site, the surrounding areas were surveyed to determine groundwater use in the area. It was determined, through discussions with local residents, that homes to the north of the site, along Wyckles Road were served by a public water supply, while those homes located northwest of the site along and off of Cantrell Road utilized private wells. Permission to sample two private wells was obtained at this time. Macon County Landfill was observed to be

operating to the west of the Decatur/Barding & Spawr landfill, across Highway 51.

3.3 SITE REPRESENTATIVE INTERVIEW

On October 7, 1996 a letter was sent to James Spawr and Junior Barding at the Standard Waste address, to inform them that the IEPA had some concerns about possible environmental problems at the site, and informed them of the state's Site Remediation Program. On October 31, another letter was sent to Mr. Spawr and Mr. Barding informing them of the agency's intent to collect environmental samples from their property. Also during this time, the agency was in contact with Mr. Mark Miller, attorney for Barding & Spawr. The purpose and process of the STEP inspection was explained to Mr. Miller, and subsequently, consent to sample the property was given. Mr. Barding and Spawr hired SKS Engineers, Inc. to be present for the sampling event and to collect split samples. Mr. Bob Krimmel, of SKS, was informed of the sampling dates, approximate sample locations, and number and type of samples to be collected.

3.4 SAMPLING ACTIVITIES

Sampling activities occurred on November 13 and 14, 1996. On these dates eight soil/sediment samples were collected in seven locations, and six groundwater samples were collected from five locations. The soil/sediment samples were shipped to USEPA contract laboratories, the organic analyses being performed by American Analytical & Technical Services, Inc in Baton Rouge, Louisiana, and inorganic analyses being performed by Chemtech Consulting Group of Englewood, New Jersey. The groundwater samples to be analyzed for organic compounds were sent to Mitkem Corporation of Warwick, Rhode Island, and the groundwater samples to be

analyzed for inorganic compounds were sent to the USEPA Central Region Laboratory in Chicago, Illinois. All samples were analyzed for the complete Target Compound List, which can be found in Appendix D.

3.4.1 SOIL/SEDIMENT SAMPLING

The eight soil/sediment samples were collected onsite, from leachate/runoff routes, from the Sangamon River and from its adjacent bottomland area. Table 3-1 describes the samples and Figure 3-1 shows approximate sample locations. Mr. Brian Bradshaw of SKS Engineering, Inc. split samples from each sample location.

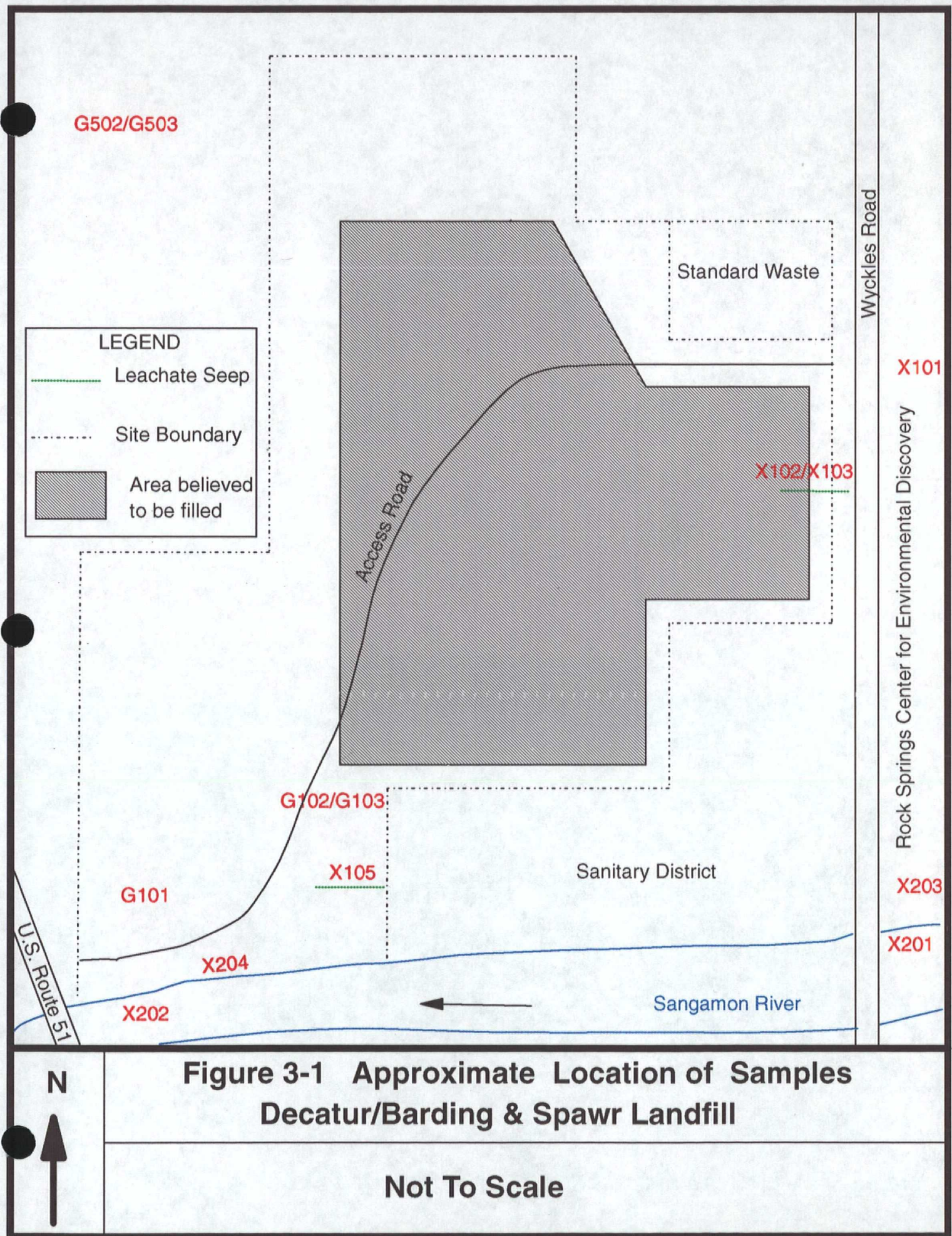
Samples were collected using stainless steel trowels. A clean trowel was used at each sample location eliminating the need to decontaminate equipment in the field. Sample material was transferred directly from the trowel into the sample jars. The duplicate sample material was mixed in a stainless steel pan prior to placement into sample jars (except material for the volatile analysis, which was transferred from the sample point directly into sample jars).

Sample X101, a background sample, was collected from the east side of Wyckles Road, across from the Standard Waste office building. This area is designated as Miami Silt Loam in the Macon County Soil Survey. (Onsite soil types consist of Miami Silt Loam; Orthents, loamy; Lawson silty clay loam; and Sawmill silty clay loam.) The sample was collected in an area of tall weeds. Duplicate samples X102/X103 were collected from a gully emanating from the east slope of the landfill along Wyckles Road. This gully drains into a roadside ditch, which flows

TABLE 3-1

SOIL/SEDIMENT SAMPLE DESCRIPTIONS

SAMPLE	DEPTH	LOCATION	APPEARANCE
X101	1" - 4"	East of Wyckles Rd. across from Standard Waste office; 73' east of east edge of Wyckles.	Medium brown clayey loam.
X102/X103	0" - 4"	Approx. 39' west of west edge of Wyckles & 218' south of south edge of south Standard Waste drive.	Light brown, moist clay, some orange iron stains.
X105	0" - 3"	Along western border of sanitary facility; 15' west of south fence & 14' north of southern-most fence corner.	Sandy silt with some gravel; gray-brown.
X201	0" - 4"	North bank of river, from water's edge; even with 4th (from north) verticle bridge support.	Dark brown, sandy material.
X202	0" - 3"	North bank of river, approx. 24" up from water's edge, where small ditch enters river from bottomland.	Medium brown; sandy clay.
X203	0" - 3"	East side of Wyckles in bottomland; approx. 38' east & 48' south of 4th (from north) verticle bridge support.	Dark loam material.
X204	0" - 2"	Near southwest corner of sanitary facility fence; approx. 79' west & 90' south of sw corner of fence.	Medium brown; sandy clay; soft & moist.



under Wyckles via a culvert onto the Rock Springs property. Drainage entering the Rock Springs property at this point has been the issue of past complaints. The sample was collected to determine if leachate/runoff from the landfill contains hazardous constituents, which may be leaving the site. Sample X105 was collected from the bottom of a leachate stream running from the east slope of the landfill toward the sanitary facility. Again, the sample was collected to determine if leachate from the landfill contained hazardous constituents that may be leaving the site.

Sample X201 was collected from the northern bank of the Sangamon River at a point upstream of the site, to represent upstream conditions. The sample was collected just east of Wyckles Road. Sample X202 was collected from the north bank of the Sangamon River at a point adjacent to the Barding & Spawr property where a small dry ditch enters the river from the bottom land. This sample was collected to determine if contaminants were entering the river at this location. Sample X203 was collected from the bottomland upstream of the site, on the east side of Wyckles Road. The sample serves to represent background conditions of bottomland wetlands (designated by National Wetland Inventory). Sample X204 was collected from the bottomland existing on the Barding and Spawr property. The sample was taken downslope of the sanitary facility, from a small dry ditch originating to the north. The sample was collected to determine if hazardous constituents were entering the bottomland along this drainage path.

3.4.2 GROUNDWATER SAMPLING

Six groundwater samples were collected from four locations, which are illustrated in Figure 3-1.

Three of these samples were collected onsite using a Geoprobe®, while the remainder were collected off site from private wells. Sample G101 was collected from a point near the southern edge of the site, to determine if the landfill has affected groundwater, and if so, whether it is flowing toward the Sangamon River. Duplicate samples G102/G103 were collected near the center of the Barding and Spawr property, off of the northwest corner of the sanitary district property. These samples were collected using the Geoprobe® to determine if landfilling activities at the site have affected groundwater.

Sample G501, a drinking water sample, was collected from a private well located approximately 1.5 miles southeast of the site. The sample is from the south side of the Sangamon River, and was collected to determine groundwater conditions at a point beyond the influence of the site.

Duplicate samples G502/G503, also drinking water samples, were collected from a residence located approximately 0.13 mile west of the site's filled area. The samples were collected to determine if groundwater in the nearby residential area has been affected by landfilling activities at the site. The samples were collected from outside water spigots, with the water running directly from the spigot into sample containers. The duplicate sample was collected for purposes of laboratory quality control/quality assurance measures.

3.5 ANALYTICAL RESULTS

SOIL/SEDIMENT

Laboratory analyses of soil/sediment samples collected from the landfill itself (X102/X103, X105) revealed low concentrations of volatile organic compounds (possibly laboratory artifacts),

low concentrations of semi-volatile organic compounds, pesticides, and inorganic analytes. Samples collected from the river sediment and nearby bottomland wetland area revealed the presence of low concentrations of semi-volatile organic compounds, pesticides, and inorganic analytes.

GROUNDWATER

Analyses of the onsite groundwater samples revealed the presence of low concentrations of six volatile and five semi-volatile organic compounds, and various inorganic compounds. The residential drinking water samples (G502/G503) showed the presence of only inorganic constituents.

A summary of the soil/sediment sample data are presented in Table 3-2, and groundwater sample data are summarized in Table 3-3. Analytical results from the 1994 CERCLA Site Inspection Prioritization are included in Appendix E.

3.6 KEY SAMPLES

Key samples are those samples with contaminant concentrations significantly above background concentrations (three times greater than background concentration, or at levels greater than or equal to the background sample detection limit for those compounds not detected in background samples). Also, the contaminants must be attributable to the site.

Table 3-4 (Key Soil/Sediment Sample Summary) identifies those soil/sediment samples collected

during the CERCLA STEP that meet these criteria. Sample X102 contained nine semi-volatile organic compounds and calcium at concentrations significantly above background. The possibility exists that these contaminants may be partially attributable to fuel combustion along Wyckles Road. Sample X105 contained concentrations of calcium and magnesium significantly above background. Groundwater samples G502 and G503 contained aluminum and lead at concentrations significantly above background concentrations. At groundwater sample point G102/ G103 benzene and chlorobenzene, as well as iron, lead, potassium, selenium, sodium, and thallium at concentrations significantly above background. Table 3-5 (Key Groundwater Samples) summarizes this information.

TABLE 3-2
SOIL/SEDIMENT SAMPLE SUMMARY
Decatur/Barding & Spawr Landfill
ILD 984 766 378

	EBJD1 MEQM0 X101	EBJD2 MEQM1 X102	EBJD3 MEQM2 X103 Dup. of X102	EBJD5 MEAQL2 X105	EBJD6 MEAQL3 X201 Background	EBJD7 MEAQL4 X202	EBJD8 MEAQL5 X203 Background	EBJD9 MEAQL6 X204
Parameters								
Volatiles	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Acetone	12 UJ	--	--	20 J	--	--	12 UJ	--
Chlorobenzene	12 U	--	--	5 J	--	--	12 U	--
Xylene (total)	12 U	--	3 J	--	--	--	12 U	--
Semi-volatiles	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Naphthalene	400 U	--	--	--	68 J	--	60 J	--
2-Methylnaphthalene	400 U	--	--	--	66 J	--	62 J	--
Dimethylphthalate	400 U	--	--	--	430 U	--	410 U	--
Acenaphthylene	400 U	--	--	--	53 J	90 J	47 J	--
Acenaphthene	400 U	190 J	--	--	430 U	--	410 U	--
Dibenzofuran	400 U	83 J	--	--	430 U	--	410 U	--
Fluorene	400 U	190 J	--	--	45 J	--	410 U	--
N-Nitrosodiphenylamine(1)	400 U	--	--	160 J	430 U	--	410 U	--
Phenanthrene	400 U	1300	160 J	--	510	210 J	370 J	52 J
Anthracene	400 U	350 J	--	--	120 J	83 J	91 J	--
Fluoranthene	400 U	1400	280 J	--	960	520	710	91 J
Pyrene	400 U	1200	240 J	26 J	1000	700	790	77 J
Butylbenzylphthalate	400 U	--	--	--	430 U	--	68 J	--
Carbazole	400 U	140 J	--	--	55 J	--	410 U	--
Benzo(a)anthracene	400 U	510	130 J	--	560	490	450	--
Chrysene	400 U	630	180 J	--	710	620	560	--
bis(2-Ethylhexyl)phthalate	36 J	62 J	74 J	200 J	130 J	87 J	120 J	78 J
Benzo(b)fluoranthene	400 U	500	140 J	48 J	640	530	470	--
Benzo(k)fluoranthene	400 U	440	120 J	35 J	540	590	420	--
Benzo(a)pyrene	400 U	590	140 J	48 J	770	820	560	--
Indeno(1,2,3-cd)pyrene	400 U	--	150 J	50 J	120 J	720	510	--
Benzo(g,h,i)perylene	400 U	650	190 J	60 J	820	930	620	--

TABLE 3-2 (continued)
SOIL/SEDIMENT SAMPLE SUMMARY
Decatur/Barding & Spawr Landfill
ILD 984 766 378

	EBJD1 MEQM0 X101	EBJD2 MEQM1 X102	EBJD3 MEQM2 X103 Dup. of X102	EBJD5 MEAQL2 X105	EBJD6 MEAQL3 X201 Background	EBJD7 MEAQL4 X202	EBJD8 MEAQL5 X203 Background	EBJD9 MEAQL6 X204
Parameters								
Pesticides/PCBs	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Heptachlor Epoxide	2 U	—	—	—	—	—	3.2 J	—
Endosulfan I	2 U	3.9 J	3.3 J	—	—	—	8.1 J	—
Dieldrin	4 U	—	—	—	—	—	7.2 J	—
4,4'-DDT	4 U	—	—	—	6.7	99 DJ	22 J	—
Gamma-Chlordane	2 U	—	—	—	2.9 J	5.4	5.7	2.5
Alpha-Chlordane	2 U	—	—	—	—	—	—	3.7
4,4'-DDE	4 U	—	—	—	—	6.7	11	—
4,4'-DDD	4 U	—	—	—	—	9.4 J	—	—
Endrin Aldehyde	4 U	4.1 J	—	—	—	6.9 J	4.2 J	—
Inorganics	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	14400	12400	12000	5600	5500	13800	8960	8910
Arsenic	7.9	7.5	6.8	2.6 B	2.7	7.2	4.7	31
Barium	67	128	115	34.8 B	58.9	126	103	276
Beryllium	0.68 B	0.67 B	0.67 B	0.49 B	0.45 B	0.82 B	0.65 B	0.6 B
Cadmium	0.23 U	—	—	—	—	—	0.41 B	—
Calcium	2040	10500	5540	33900	9110	12900	12800	37800
Chromium	20.9	20.1	21.1	11.6	14.6	22.3	25.5	15.1
Cobalt	7.1 B	5.7 B	5.7 B	1.8 B	2.5 B	6.7 B	4.2 B	7.2 B
Copper	18.9	18.3	22.6	14.3	26.8	77.2	74.5	20.8
Cyanide	0.42 U	0.45 B	—	0.55 B	—	—	—	0.99
Iron	23700	30600	29300	18600	10700	22600	15800	67600
Lead	19.2	30.2	37.9	12.7	29.7	43.2	59.1	22
Magnesium	3840	7080	4630	18200	3880	6950	5120	8830
Manganese	451	136	124	149	303	594	395	1170
Nickel	21.1	17.7	17.5	14.2	13.6	21.7	20.3	15.7
Potassium	1910	2280	2270	1260 B	817 B	2080	1090 B	1900
Silver	0.47 U	—	—	—	—	—	0.5 B	—
Sodium	207 B	226 B	213 B	281 B	720 B	475 B	197 B	324 B
Vanadium	29.2	29.4	27.3	13.4 B	11.9 B	28.3	18.3	20
Zinc	63 E	82.3 E	88.6 E	59.1 E	81.2 E	142 E	193 E	127 E

B, E, J Value is estimated

TABLE 3-3
GROUNDWATER SAMPLES
Decatur/Barding & Spawr Landfill
ILD 984 766 378

Parameters	97IE01S01 EBJB9 G501 Background	97IE01S02 EBJC0 G502	97IE01D01 EBJC4 G503 Dup. of G502	MEAQL7 EBJC5 G101	MEAQL8 EBJC6 G102	MEAQK5 EBJC8 G103 Dup. of G102
Volatiles	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2-Butanone	0.8 J	--	--	--	--	--
Benzene	1 U	--	--	--	11 J	9 J
4-Methyl-2-pentanone	5 U	--	--	--	8 J	--
2-Hexanone	5 U	--	--	--	10 J	--
Chlorobenzene	1 U	--	--	--	9 J	10
Xylene (total)	1 U	--	--	--	3 J	3 J
1,1,2,2-Tetrachloroethane	1 U	--	--	--	3 J	--
Semi-volatiles	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
1,4-Dichlorobenzene	N.A.	N.A.	N.A.	--	5 J	4 J
Naphthalene	5 U	--	--	--	9 J	9 J
Diethylphthalate	5 U	--	--	--	2 J	2 J
N-Nitrosodiphenylamine (1)	5 U	--	--	--	--	4 J
Di-n-butylphthalate	5 U	--	--	--	--	1 J
Inorganics	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Aluminum	80 U	227	282	587 J	129 B	95.8 B
Antimony	1 U	--	--	9.8 B	11.9 B	11.1 B
Barium	125	84	84	101 B	250	250
Calcium	87800	120000	120000	125000	100000	99600
Chromium	10 U	--	--	--	3.4 B	2.6 B
Cobalt	6 U	--	--	2.2 B	4.8 B	4.2 B
Copper	6	8.1	9.5	--	--	--
Iron	2730	1320	1350	359	19900	19800
Lead	2 U	4	4	--	3.2	2.8 B
Magnesium	41600	61000	61200	121000	50100	49600
Manganese	72	85	83	1650	134	128
Nickel	20 U	--	--	9.2 B	26.6 B	23.5 B
Potassium	5000 U	--	--	3090	74100	74200
Selenium	2 U	--	--	33.9	45.6	54.2
Sodium	15200	14200	13800	54300	77300	79200
Thallium	2 U	--	--	--	35.5	39.3
Zinc	40 U	--	--	6.6 B	35.1	28.4

U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.

J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having a QC problem.

B The reported value is less than the quantitation limit but greater than the detection limit.

N.A. Not Analyzed

TABLE 3-4
KEY SOIL/SEDIMENT SAMPLE SUMMARY
Decatur/Barding & Spawr Landfill
ILD 984 766 378

Parameters	EBJD1 MEAQM0 X101 Background	EBJD2 MEAQM1 X102	EBJD5 MEAQL2 X105
Semi-volatiles	ug/kg	ug/kg	ug/kg
Phenanthrene	400 U	1300	--
Fluoranthene	400 U	1400	--
Pyrene	400 U	1200	--
Benzo(a)anthracene	400 U	510	--
Chrysene	400 U	630	--
Benzo(b)fluoranthene	400 U	500	--
Benzo(k)fluoranthene	400 U	440	--
Benzo(a)pyrene	400 U	590	--
Indeno(1,2,3-cd)pyrene	400 U	--	--
Benzo(g,h,i)perylene	400 U	650	--
Inorganics	mg/kg	mg/kg	mg/kg
Calcium	2040	10500	33900
Magnesium	3840	--	18200

TABLE 3-5
KEY GROUNDWATER SAMPLES
Decatur/Barding & Spawr Landfill
ILD 984 766 378

Parameters	97IE01S01 EBJB9 G501 Background	97IE01S02 EBJC0 G502	97IE01D01 EBJC4 G503 Dup. of G502	MEAQL7 EBJC5 G101	MEAQL8 EBJC6 G102	MEAQK5 EBJC8 G103 Dup. of G102
Volatiles	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Benzene	1 U	--	--	--	11	
Chlorobenzene	1 U	--	--	--		10
Inorganics	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Aluminum	80 U	227	282	587 J		
Iron	2730				19900	19800
Lead	2 U	4	4	--	3.2	
Manganese	72			1650		
Potassium	5000 U	--	--		74100	74200
Selenium	2 U	--	--	33.9	45.6	54.2
Sodium	15200			54300	77300	79200
Thallium	2 U	--	--	--	35.5	39.3

U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.

J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having a QC problem.

4.0 SOURCE CHARACTERIZATION

4.1 INTRODUCTION

This section briefly discussed the hazardous waste source that has been identified during the CERCLA site investigations.

4.2 LANDFILL

Landfilling activities at the site began in the mid-1950s and continued until the late 1960s.

During this time, the site was used for landfilling industrial and municipal wastes. Because operations occurred prior to strict regulation, there are no records concerning specific wastes deposited at the site, nor the area utilized for filling activities. Past environmental investigations indicate that approximately 30 of the existing 64 acres were filled.

No type of liner is known to exist at the site, and no runoff/runon controls are in place. Leachate streams have been documented leaving the site.

During the STEP investigation various semi-volatile organic compounds were detected, particularly on the eastern border of the site. Groundwater samples collected onsite revealed low concentrations of benzene and chlorobenzene, as well as various inorganic, naturally-occurring constituents. During the Screening Site Inspection of 1993, the soil was found to contain pesticides and five inorganics above background levels.

5.0 MIGRATION/EXPOSURE PATHWAYS

5.1 INTRODUCTION

The CERCLA Site Assessment Program identifies three migration pathways and one exposure pathway by which hazardous substances may pose a threat to human health and/or the environment. Consequently, sites are evaluated based on their known or potential impact on these four pathways. The pathways evaluated are groundwater migration, surface water migration, soil exposure, and air migration.

This section presents and discusses information collected during the CERCLA Site Team Evaluation Prioritization of the Decatur/Barding & Spawr Landfill site. This information, together with information documented in other sources, will be utilized in analyzing the site's impact on the four pathways and the various human and environmental targets with the established target distance limits.

Discussions of the pathways will include pathway descriptions; contaminant sources; and targets, such as human populations, fisheries, endangered species, wetlands and other sensitive environments.

5.2 GROUNDWATER

Regional geological information suggests that the area consists of overburden composed of loess (silt), loamy and sandy till, and laterally discontinuous silty clay and clay till. Underlying these

units, Pennsylvanian shale is expected with interbedded sandstone, limestone, and coal. The Pennsylvanian bedrock can only produce small quantities of groundwater. Site-specific geological information is not available. Shallow groundwater flow is believed to flow to the south-southeast toward the Sangamon River.

There are no known public water supply wells located within four miles of the site. Residents of Decatur obtain drinking water from Lake Decatur, and Harristown residents obtain water from their own municipal wells, which are located beyond the 4-mile radius of the site. Rural residents within 4 miles of the site utilize groundwater drawn from the glacial drift. The nearest known private well is located at the Standard Waste office (although not used for drinking). Others are located in the residential area just to the northwest of the site. Table 5-1 shows the estimated population within each distance ring utilizing groundwater as a potable source.

TABLE 5-1

ESTIMATED POPULATION UTILIZING GROUNDWATER

Distance From Site	Estimated Population
0 - 1/4 mile	77
1/4 - 1/2 mile	125
1/2 - 1 mile	618
1 - 2 miles	1,599
2 - 3 miles	2,923
3 - 4 miles	1,183

Past sampling of the Standard Waste well indicated an elevated concentration of copper (96.6 ppb). Groundwater samples collected from the landfill area itself show the presence of low concentrations of volatile and semi-volatile organic compounds, and aluminum, iron, lead, potassium, selenium, sodium, and thallium were found at concentrations significantly above the background concentrations. Only selenium and thallium were found at concentrations exceeding the Maximum Contaminant Level (MCL), which is the maximum allowable concentration in a public drinking water supply. Benzene, antimony, iron, manganese, selenium and thallium were detected at concentrations exceeding the IEPA's groundwater corrective action objectives (see section 6.2 for more detailed information).

5.3 SURFACE WATER

Runoff from the site enters the Sangamon River, either directly or via roadside drainage ditches. The river flows along the southern border of both the sanitary district facility and the site. The 15-mile surface water route continues for its full length along the Sangamon River, ending in a rural area of Sangamon County. The river has an average discharge of approximately 641 ft³/s (at south edge of Decatur, 1.2 miles downstream from dam), according to U.S. Geological Survey Water Data Report IL-89-2.

No known drinking water intakes exist along the surface water pathway. The Sangamon River is considered to be fishery, but no sensitive environments, other than wetlands exist along the pathway. Wetlands do exist along the river bottomland, both onsite and downstream. According to the National Wetland Inventory Wetland maps, approximately 15.5 miles of wetland frontage

(primarily palustrine, broad-leaved deciduous forest) exist along the surface water path.

Sample X202, collected from the bank of the river along the southern boundary of the site, contained various semi-volatile organic compounds, pesticides, and inorganic compounds.

Sample X204, collected from the bottomland wetland area contained low concentrations of semi-volatile organic compounds, two pesticides, and various inorganic constituents.

Although the downstream sediment samples did not contain concentrations significantly above background, several analytes were found to exceed TACO objectives or other ecological benchmarks. See Section 6.3 for more detailed information concerning the comparison of sediment sample concentrations to various benchmarks.

5.4 SOIL EXPOSURE

Because of the years of operation of the landfill, the site never underwent closure. During site visits the site was found to be well vegetated with tall grasses and in some areas, trees. However, due to erosion and leachate seepage, a few areas of exposed soil are present. Site access is not restricted by any physical means, though its location does not lend itself to passersby or recreational use. It is estimated that 77 people reside within 1/4 mile of the site, and a total of 49,163 reside within 4 miles of the site.

Soil samples collected from the site revealed the presence of semi-volatile organic compounds, pesticides, and various inorganic constituents. Sample X102 contained benzo(a)pyrene at a

concentration exceeding the Cancer Risk value of 0.088 ppm, as listed in the Superfund Chemical Data Matrix (SCDM). None of the soil sample organic compound concentrations exceeded IEPA's TACO objectives. The inorganic compounds could not be compared to TACO objectives, since the pH of the samples is not known.

5.5 AIR PATHWAY

No air samples have been collected, and no releases to the air pathway have been documented. The presence of vegetation over the majority of the site should minimize the likelihood of windblown contaminants leaving the site. Approximately 77 residences are located within 1/4 mile of the site.

6.0 ADDITIONAL RISK-BASED OBJECTIVES

Three forms of screening objectives were used to perform a site specific risk-based assessment of the site: IEPA's Tiered Approach to Corrective Action Objectives (TACO), Ontario Aquatic Sediment Quality Guidelines, and U.S. EPA Ecotox Thresholds. These objectives have not been used to assess the site for CERCLA purposes, but rather to provide insight into how the site would be evaluated under these non-CERCLA criteria. It should be noted that TACO objectives, Ontario guidelines, and Ecotox thresholds have not been established for all analytes on the Target Compound List (nor tentatively identified compounds). Therefore, any risk posed by such contaminants can not be evaluated at this time.

6.1 TACO SOIL OBJECTIVES

Tier 1 of TACO contains a set of objective values that are based on simple numeric models. Each set of values is specific to the intended use of the property: residential or industrial/commercial. The values for soil objectives are specific to three exposure routes: ingestion, inhalation, and migration to groundwater.

None of the soil samples collected during the CERCLA STEP nor the 1994 CERCLA Site Inspection Prioritization (SIP) contained organic contaminant concentrations above the TACO objectives. However, four of the organic compounds do not have established TACO objectives. The inorganic contaminant concentrations can not be compared to the TACO objectives because the pH of the samples is unknown.

6.2 TACO GROUNDWATER OBJECTIVES

Because groundwater in the vicinity of the site is used as a potable source, contaminant concentrations are compared to Class I groundwater objectives. One organic compound and five inorganic compounds were found at concentrations above the TACO groundwater objectives. Refer to Table 6-1 for the comparison of sample data to the TACO objectives. None of the groundwater samples collected during the 1994 CERCLA SIP exceeded TACO groundwater objectives.

6.3 SEDIMENT BENCHMARKS

The sediment samples collected during the STEP sampling event were compared to ecological benchmarks to help determine whether site activities have impacted the surface water pathway. Two sources of benchmarks were used for this comparison: Ontario sediment quality guidelines and U.S. EPA ecotox thresholds. Ontario sediment quality guidelines are non-regulatory ecological benchmark values that serve as indicators of potential aquatic impacts. Levels of contaminants below Ontario benchmarks indicate a level of pollution which has no effect on the majority of the sediment-dwelling organisms. Contaminants for which no Ontario benchmarks were available were compared to U.S. EPA ecotox thresholds. Ecotox thresholds are ecological benchmarks above which there is sufficient concern regarding adverse ecological effects to warrant further site investigation. Ecotox thresholds are to be used for screening purposes and are not regulatory criteria, site-specific cleanup standards, or remediation goals.

Of the sediment samples collected during the STEP, two organic and two inorganic compounds

were found to exceed the Ontario guidelines. Refer to Table 6-2 for the comparison of STEP sample data to these benchmarks. No river sediment samples were collected during the CERCLA SIP, so no values were compared to sediment benchmarks.

TABLE 6-1
TACO GROUNDWATER OBJECTIVES
Decatur/Barding & Spawr Landfill
ILD 984 766 378

Parameters	TACO Groundwater Objective	97IE01S01 EBJB9 G501 Background	97IE01S02 EBJC0 G502	97IE01D01 EBJC4 G503 Dup. of G502	MEAQL7 EBJC5 G101	MEAQL8 EBJC6 G102	MEAQK5 EBJC8 G103 Dup. of G102
Volatiles	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2-Butanone	NA	0.8 J	--	--	--	--	--
Benzene	5	1 U	--	--	--	11	9 J
4-Methyl-2-pentanone	NA	5 U	--	--	--	8 J	--
2-Hexanone	NA	5 U	--	--	--	10 J	--
Chlorobenzene	100	1 U	--	--	--	9 J	10
Xylene (total)	10,000	1 U	--	--	--	3 J	3 J
1,1,2,2-Tetrachloroethane	NA	1 U	--	--	--	3 J	--
Semi-volatiles	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
1,4-Dichlorobenzene	75	--	--	--	--	5 J	4 J
Naphthalene	25	5 U	--	--	--	9 J	9 J
Diethylphthalate	5600	5 U	--	--	--	2 J	2 J
N-Nitrosodiphenylamine (1)	10	5 U	--	--	--	--	4 J
Di-n-butylphthalate	NA	5 U	--	--	--	--	1 J
Inorganics	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Aluminum	NA	80 U	227	282	587 J	129 B	95.8 B
Antimony	6	1 U	--	--	9.8 B	11.9 B	11.1 B
Barium	2000	125	84	84	101 B	250	250
Calcium	NA	87800	120000	120000	125000	100000	99600
Chromium	100	10 U	--	--	--	3.4 B	2.6 B
Cobalt	1000	6 U	--	--	2.2 B	4.8 B	4.2 B
Copper	850	6	8.1	9.5	--	--	--
Iron	5,000	2730	1320	1350	359	19900	19800
Lead	7.5	2 U	4	4	--	3.2	2.8 B
Magnesium	NA	41600	61000	61200	121000	50100	49600
Manganese	150	72	85	83	1650	134	128
Nickel	100	20 U	--	--	9.2 B	26.6 B	23.5 B
Potassium	NA	5000 U	--	--	3090	74100	74200
Selenium	50	2 U	--	--	33.9	45.6	54.2
Sodium	NA	15200	14200	13800	54300	77300	79200
Thallium	2	2 U	--	--	--	35.5	39.3
Zinc	5,000	40 U	--	--	6.6 B	35.1	28.4

U Indicates that the compound was analyzed for, but not detected. The sample quantitation limit corrected for dilution and percent moisture is reported.

J Indicates an estimated value. This flag is used either when estimating a concentration for a tentatively identified compound or when the data indicates the presence of a compound but the result is less than the sample quantitation limit, but greater than zero. The flag is also used to indicate a reported result having a QC problem.

B The reported value is less than the quantitation limit but greater than the detection limit.

NA Not Available, Objective not established

Concentrations in red/bold exceed TACO objective

TABLE 6-2
COMPARISON OF SEDIMENT SAMPLES TO BENCHMARKS
Decatur/Barding & Spawr Landfill

	Sediment Benchmark	EBJD6 MEAQL3 X201 Background	EBJD7 MEAQL4 X202	EBJD8 MEAQL5 X203 Background	EBJD9 MEAQL6 X204
Parameters					
Volatiles	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
None Detected					
Semi-volatiles	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Naphthalene	480	68 J	--	60 J	--
2-Methylnaphthalene	NA	66 J	--	62 J	--
Acenaphthylene	NA	53 J	90 J	47 J	--
Fluorene	540	45 J	--	410 U	--
Phenanthrene	850	510	210 J	370 J	52 J
Anthracene	NA	120 J	83 J	91 J	--
Fluoranthene	2900	960	520	710	91 J
Pyrene	660	1000	700	790	77 J
Butylbenzylphthalate	11000	430 U	--	68 J	--
Carbazole	NA	55 J	--	410 U	--
Benzo(a)anthracene	NA	560	490	450	--
Chrysene	NA	710	620	560	--
bis(2-Ethylhexyl)phthalate	NA	130 J	87 J	120 J	78 J
Benzo(b)fluoranthene	NA	640	530	470	--
Benzo(k)fluoranthene	NA	540	590	420	--
Benzo(a)pyrene	430	770	820	560	--
Indeno(1,2,3-cd)pyrene	NA	120 J	720	510	--
Benzo(g,h,i)perylene	NA	820	930	620	--
Pesticides/PCBs	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Heptachlor Epoxide	NA	--	--	3.2 J	--
Endosulfan I	2.9	--	--	8.1 J	--
Dieldrin	2	--	--	7.2 J	--
4,4'-DDT	7	6.7	99 DJ	22 J	--
Gamma-Chlordane	NA	2.9 J	5.4	5.7	2.5
Alpha-Chlordane	NA	--	--	--	3.7
4,4'-DDE	5	--	6.7	11	--
4,4'-DDD	8	--	9.4 J	--	--
Endrin Aldehyde	NA	--	6.9 J	4.2 J	--
Inorganics		mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	NA	5500	13800	8960	8910
Arsenic	6	2.7	7.2	4.7	31
Barium	NA	58.9	126	103	276
Beryllium	NA	0.45 B	0.82 B	0.65 B	0.6 B
Cadmium	0.6	--	--	0.41 B	--
Calcium	NA	9110	12900	12800	37800
Chromium	NA	14.6	22.3	25.5	15.1
Cobalt	50	2.5 B	6.7 B	4.2 B	7.2 B
Copper	18	26.8	77.2	74.5	20.8
Cyanide	0.01	--	--	--	0.99
Iron	20000	10700	22800	15800	67600
Lead	31	29.7	43.2	59.1	22
Magnesium	NA	3880	6950	5120	8830
Manganese	460	303	594	395	1170
Nickel	16	13.6	21.7	20.3	15.7
Potassium	NA	817 B	2080	1090 B	1900
Silver	0.5	--	--	0.5 B	--
Sodium	NA	720 B	475 B	197 B	324 B
Vanadium	NA	11.9 B	28.3	18.3	20
Zinc	120	81.2 E	142 E	193 E	127 E

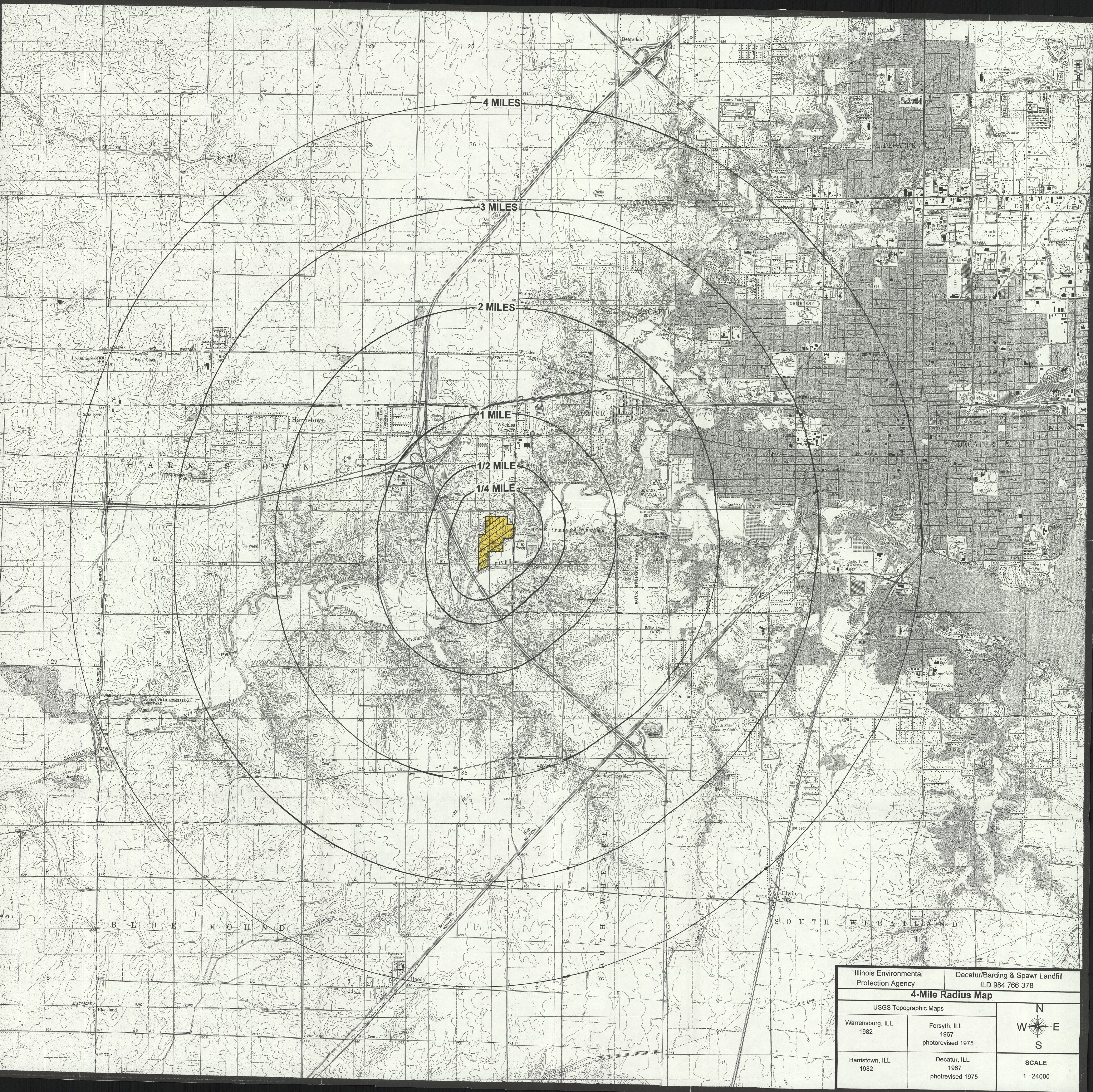
B, E, J Value is estimated

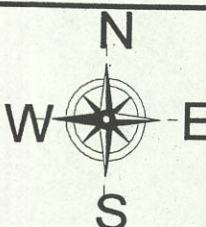
NA Not Available - Benchmark not established

Concentrations in Red/Bold exceed benchmark

APPENDIX A

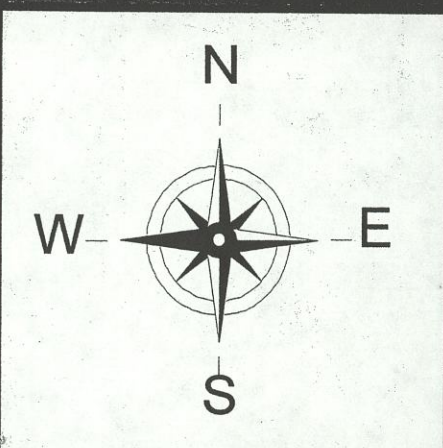
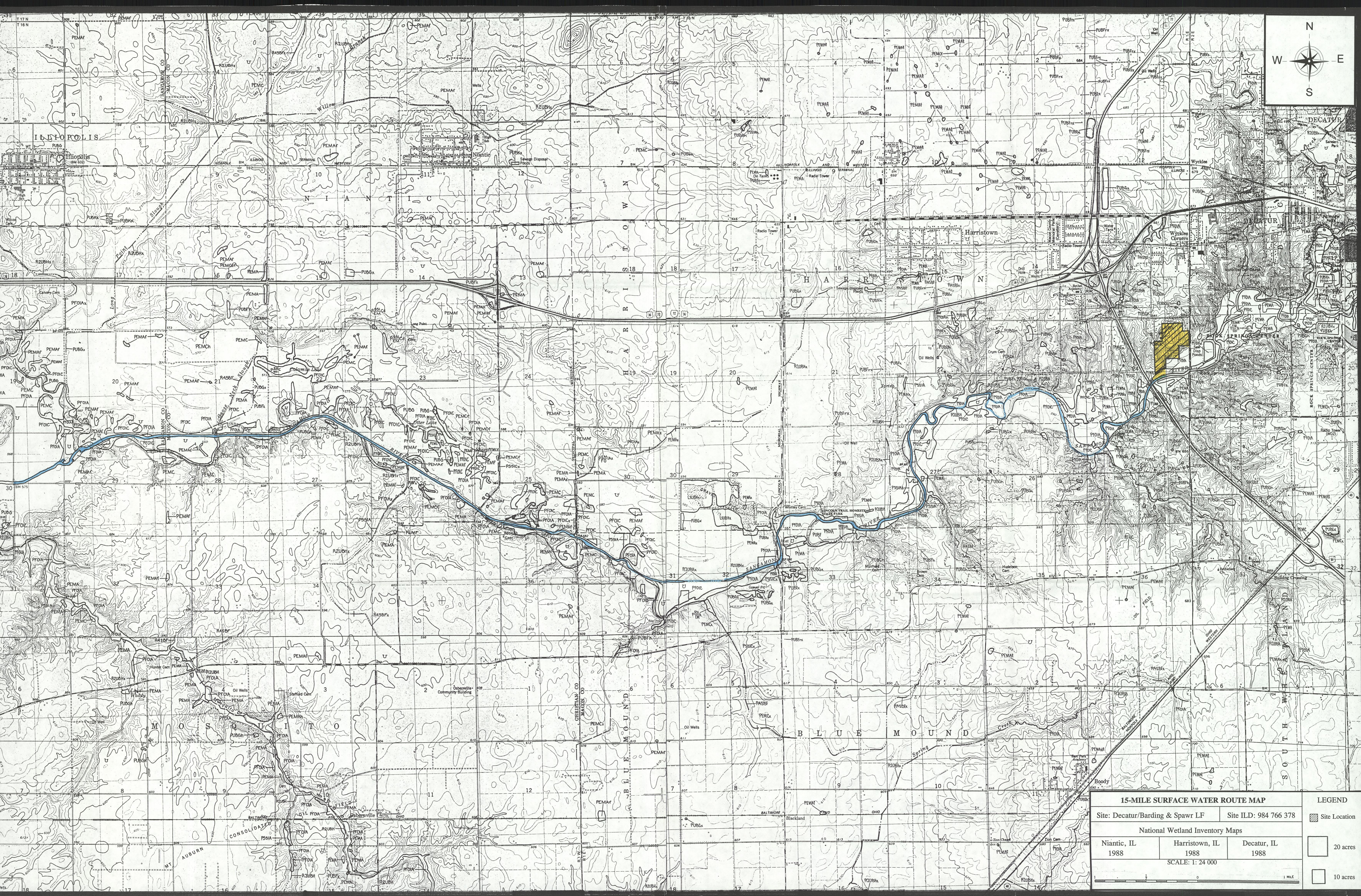
4-MILE RADIUS MAP



Illinois Environmental Protection Agency		Decatur/Barding & Spawr Landfill ILD 984 766 378	
4-Mile Radius Map			
USGS Topographic Maps			
Warrensburg, ILL 1982	Forsyth, ILL 1967 photorevised 1975		
Harrisown, ILL 1982	Decatur, ILL 1967 photorevised 1975	SCALE 1 : 24000	

APPENDIX B

15-MILE SURFACE WATER ROUTE MAP



15-MILE SURFACE WATER ROUTE MAP			LEGEND
Site: Decatur/Barding & Spawr LF		Site ILD: 984 766 378	Site Location
National Wetland Inventory Maps			
Niantic, IL 1988	Harristown, IL 1988	Decatur, IL 1988	20 acres
SCALE: 1: 24 000			10 acres

APPENDIX C
STEP PHOTOGRAPHS


Site Team Evaluation Prioritization Photos

DATE: 11-13-96	ILD: 1158040012 COUNTY: Macon
TIME: 9:15 am	SITE NAME: Decatur/Barding & Spawr Landfill
PHOTOGRAPH TAKEN BY: J. Triller	
COMMENTS: Picture taken toward: Northwest	
Duplicate sample	
location X102/X103	
Collected from	
east side of land-	
fill along Wyckles Road.	

DATE: 11-13-96
TIME: 9:15 am
PHOTOGRAPH TAKEN BY: J. Triller
COMMENTS: Picture taken toward: West
Location of
duplicate samples
X102/X103.




Site Team Evaluation Prioritization Photos

DATE: 11-13-96	ILD: 1158040012 COUNTY: Macon
TIME: 11:15 am	SITE NAME: Decatur/Barding & Spawr Landfill
PHOTOGRAPH TAKEN BY: J. Triller	
COMMENTS: Picture taken toward: East	
Sample X105,	
collected from	
bottom of leachate	
seep located on	
east side of land- fill.	

DATE: 11-13-96
TIME: 11:15 am
PHOTOGRAPH TAKEN BY: J. Triller
COMMENTS: Picture taken toward: Northeast
Sample location
X105.




Site Team Evaluation Prioritization Photos

DATE: 11-13-96	ILD: 1158040012 COUNTY: Macon
TIME: 11:15 am	SITE NAME: Decatur/Barding & Spawr Landfill
PHOTOGRAPH TAKEN BY: J. Triller	
COMMENTS: Picture taken toward: West	
Sample location	
X105.	

DATE: 11-13-96
TIME: 1:45 pm
PHOTOGRAPH TAKEN BY: J. Triller
COMMENTS: Picture taken toward: Southeast
Sample X202
collected from the
north side of
Sangamon River
at south border
of site.




Site Team Evaluation Prioritization Photos

DATE: 11-13-96	ILD: 1158040012 COUNTY: Macon
TIME: 1:45 pm	SITE NAME: Decatur/Barding & Spawr Landfill
PHOTOGRAPH TAKEN BY: J. Triller	
COMMENTS: Picture taken toward: West	
Sample location	
X202.	

DATE: 11-13-96
TIME: 1:45 am
PHOTOGRAPH TAKEN BY: J. Triller
COMMENTS: Picture taken toward: West
Sample location
X202.




Site Team Evaluation Prioritization Photos

DATE: 11-13-96	ILD: 1158040012 COUNTY: Macon
TIME: 2:00 pm	SITE NAME: Decatur/Barding & Spawr Landfill
PHOTOGRAPH TAKEN BY: J. Triller	
COMMENTS: Picture taken toward: North	
Sample X204	
collected from	
a dry ditch near	
southwest corner	
of sanitary dist. facility.	

DATE: 11-13-96
TIME: 2:00 pm
PHOTOGRAPH TAKEN BY: J. Triller
COMMENTS: Picture taken toward: South
Sample location
X204.




Site Team Evaluation Prioritization Photos

DATE: 11-13-96	ILD: 1158040012 COUNTY: Macon
TIME: 2:30 pm	SITE NAME: Decatur/Barding & Spawr Landfill
PHOTOGRAPH TAKEN BY: J. Triller	
COMMENTS: Picture taken toward: Northeast	
Sample G101	
collected with	
GEOPROBE near southern edge of site.	

DATE: 11-13-96
TIME: 2:30 pm
PHOTOGRAPH TAKEN BY: J. Triller
COMMENTS: Picture taken toward: East
Sample point
G101.




Site Team Evaluation Prioritization Photos

DATE: 11-13-96	ILD: 1158040012 COUNTY: Macon
TIME: 3:45 pm	SITE NAME: Decatur/Barding & Spawr Landfill
PHOTOGRAPH TAKEN BY: J. Triller	
COMMENTS: Picture taken toward: Southeast	
Sample point X201	
located on north	
bank of Sangamon	
River, just east of Wyckles Road.	

DATE:
TIME:
PHOTOGRAPH TAKEN BY:
COMMENTS: Picture taken toward:

No Photo


Site Team Evaluation Prioritization Photos

DATE: 11-13-96	ILD: 1158040012 COUNTY: Macon
TIME: 4:00 pm	SITE NAME: Decatur/Barding & Spawr Landfill
PHOTOGRAPH TAKEN BY: J. Triller	
COMMENTS: Picture taken toward: Southeast	
Sample point X203	
located near	
north bank of	
Sangamon River, on east side of Wyckles Road.	

DATE: 11-13-96
TIME: 4:00 pm
PHOTOGRAPH TAKEN BY: Judy Triller
COMMENTS: Picture taken toward: Northwest
Sample point X203.



Site Team Evaluation Prioritization Photos

DATE: 11-14-96	ILD: 1158040012 COUNTY: Macon
TIME: 8:40 am	SITE NAME: Decatur/Barding & Spawr Landfill
PHOTOGRAPH TAKEN BY: J. Triller	
COMMENTS: Picture taken toward: West	
Sample X101 col-	
lected from east	
side of Wyckles	
Rd. across from Standard Waste office.	

DATE: 11-14-96
TIME: 8:40 am
PHOTOGRAPH TAKEN BY: J. Triller
COMMENTS: Picture taken toward: Northwest
Sample point X101.



Site Team Evaluation Prioritization Photos

DATE: 11-14-96	ILD: 1158040012 COUNTY: Macon
TIME: 10:00 am	SITE NAME: Decatur/Barding & Spawr Landfill
PHOTOGRAPH TAKEN BY: J. Triller	
COMMENTS: Picture taken toward: North	
Duplicate samples	
G502/G503 collect-	
ed from residence	
on Bowsher Road,	
northwest of	
landfill.	



DATE: 11-14-96
TIME: 10:00 am
PHOTOGRAPH TAKEN BY: J. Triller
COMMENTS: Picture taken toward: Northwest
Duplicate samples
G502/G503.



Site Team Evaluation Prioritization Photos

DATE: 11-14-96	ILD: 1158040012 COUNTY: Macon
TIME: 11:00 am	SITE NAME: Decatur/Barding & Spawr Landfill
PHOTOGRAPH TAKEN BY: J. Triller	
COMMENTS: Picture taken toward: North	
Sample point G501	
collected from	
Conservation	
office, southeast	
of site.	



DATE: 11-14-96
TIME: 11:00 am
PHOTOGRAPH TAKEN BY: J. Triller
COMMENTS: Picture taken toward: Northwest
Sample point G501.



Site Team Evaluation Prioritization Photos

DATE: 11-14-96	ILD: 1158040012 COUNTY: Macon
TIME: 10:45 am	SITE NAME: Decatur/Barding & Spawr Landfill
PHOTOGRAPH TAKEN BY: J. Triller	
COMMENTS: Picture taken toward: East	
Duplicate samples	
G102/G103 collect-	
ed with GEOPROBE	
near center of	
site.	



DATE: 11-14-96
TIME: 10:45 am
PHOTOGRAPH TAKEN BY: J. Triller
COMMENTS: Picture taken toward: Southwest
Duplicate samples
G102/G103.



APPENDIX D

TARGET COMPOUND LIST

Target Compound List

Volatiles

Chloromethane	1,2-Dichloropropane
Bromomethane	Cis-1,3-Dichloropropene
Vinyl Chloride	Trichloroethene
Chloroethane	Dibromochloromethane
Methylene Chloride	1,1,2-Trichloroethane
Acetone	Benzene
Carbon Disulfide	trans-1,3-Dichloropropane
1,1-Dichloroethene	Bromoform
1,1-Dichloroethane	4-Methyl-2-pentanone
1,2-Dichloroethene (total)	2-Hexanone
Chloroform	Tetrachloroethene
1,2-Dichloroethane	Toluene
2-Butanone	1,1,2,2-Tetrachloroethane
1,1,1-Trichloroethane	Chlorobenzene
Carbon Tetrachloride	Ethyl benzene
Bromodichloromethane	Styrene
	Xylenes (total)

Source: Target Compound List for water and soil with low or medium levels of volatile and semivolatile organic contaminants, as shown in the Quality Assurance Project Plan for Region V Superfund Site Assessment Program, September 27, 1991.

Target Compound List (Continued)

Pesticide/PCB

alpha-BHC	4,4-DDT
beta-BHC	Methoxychlor
delta-BHC	Endrin ketone
gamma-BHC (Lindane)	Endrin aldehyde
Heptachlor	alpha-chlordane
Aldrin	gamma-chlordane
Heptachlor epoxide	Toxaphene
Endosulfan I	Aroclor-1016
Dieldrin	Aroclor-1221
4,4-DDE	Aroclor-1232
Endrin	Aroclor-1242
Endosulfan II	Aroclor-1248
4,4-DDD	Aroclor-1254
Endosulfan sulfate	Aroclor-1260

Source: Target Compound List for water and soil containing less than high concentrations of pesticides/aroclor, as shown in the Quality Assurance Project Plan for Region V Superfund Site Assessment Program, September 27, 1991.

Target Analyte List

Aluminum	Magnesium
Antimony	Manganese
Arsenic	Mercury
Barium	Nickel
Beryllium	Potassium
Cadmium	Selenium
Calcium	Silver
Chromium	Sodium
Cobalt	Thallium
Copper	Vanadium
Iron	Zinc
Lead	Cyanide

Source: Target Analyte List in the Quality Assurance Project Plan for Region V Superfund Site Assessment Program, September 27, 1991.

APPENDIX E

1994 CERCLA SIP SAMPLE RESULTS

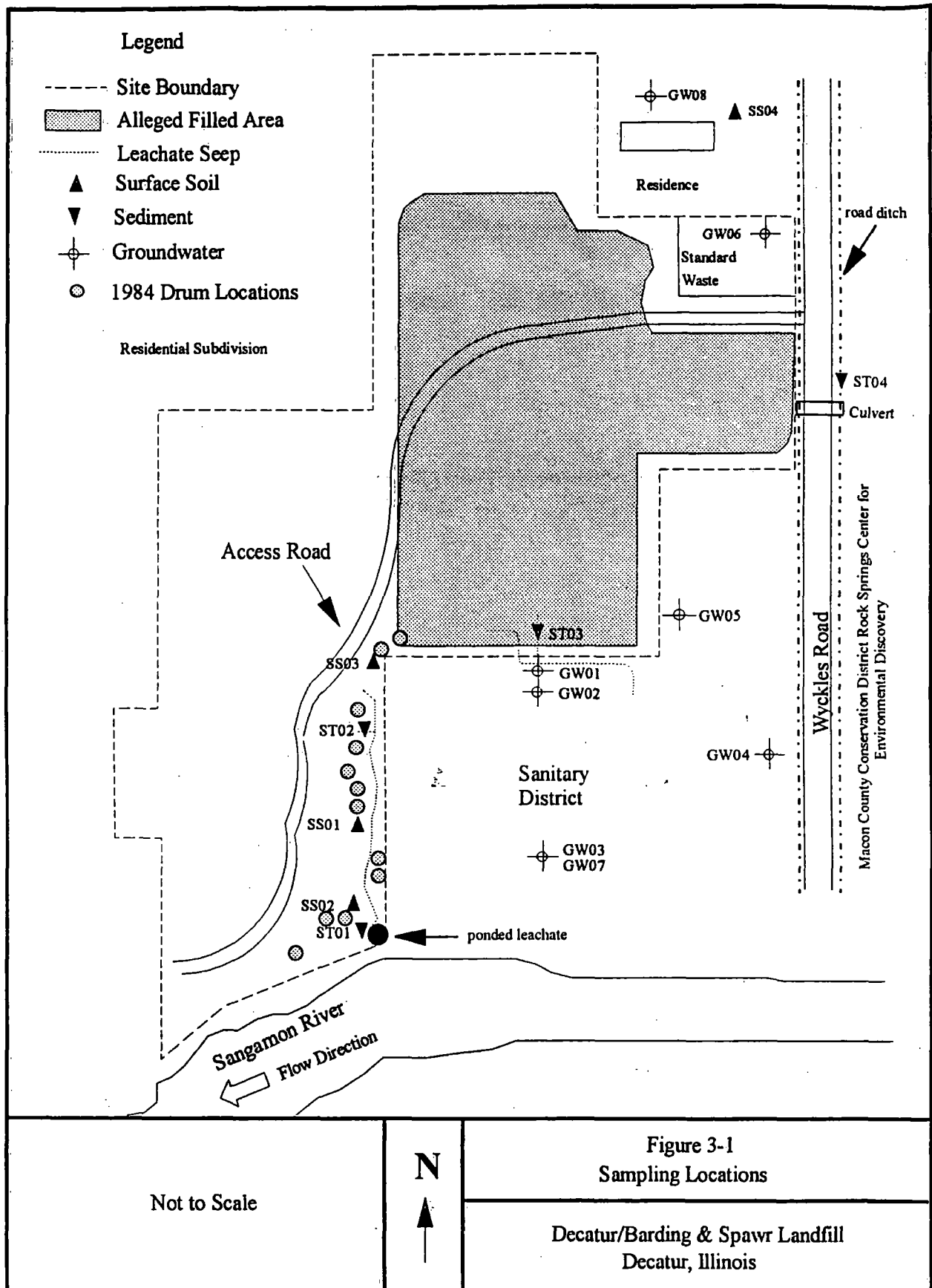


Table 3-1
Decatur/Barding & Spawr Landfill
Sample Descriptions

Sample	Depth Units	Appearance	Location
GW01	37.5 feet	Clear, odorless	Sanitary District monitoring well G102D
GW02	11.6 feet	Slightly brown, odorless	Sanitary District monitoring well G102S
GW03	28.4 feet	Clear, odorless	Sanitary District monitoring well G103
GW04	42.5 feet	Clear, odorless	Sanitary District monitoring well G104
GW05	51.7 feet	Clear, odorless	Sanitary District monitoring well G101D
GW06	40 feet	Clear, odorless	Standard Waste Facility Well
GW07	28.4 feet	Clear, odorless	Sanitary District monitoring well G103, duplicate of GW03
GW08	unknown	Clear, hydrogen sulfide odor	Private well; selected to represent background groundwater conditions
ST01	2 - 6 inches	Reddish-brown clay	In a leachate channel about forty feet west of the Sanitary District, 200 feet north of the Sangamon River
ST02	2 - 6 inches	Reddish-brown clay	In a leachate channel about thirty feet west of the Sanitary District, 800 feet north of the Sangamon River
ST03	2 - 6 inches	Black silty muck	In a leachate channel about fifty feet north of GW01 and GW02.

Appendix D
Decatur/Barding & Spawr Landfill
Analytical Results

Data Qualifiers		
Analysis	Qualifier	Description
Organic	U	Compound was analyzed but not detected. The associated numerical value is the sample quantitation limit.
	J	An estimated value. This flag is used either when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria with the result less than the sample quantitation limit but greater than zero.
	B	Reported value is less than the CRQL, but greater than the instrument detection limit.
	N	Indicates presumptive evidence of a compound. This flag is used only for TICs.
	A	Indicates that a TIC is a suspected aldol-condensation product.
	P	Indicates there is greater than 25 percent difference for detected concentrations between two gas chromatograph columns in pesticide/Arochlor analysis. The lower of the two values is flagged.
Inorganic	U	Compound was analyzed for but not detected. The associated numerical value is the sample quantitation limit.
	J	An estimated value.
	B	The reported value is less than the CRDL, but greater than or equal to the IDL.
	N	Spiked sample recovery not within control limits.
	W	Post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50 percent of spike absorbance.
	*	Duplicate analysis not within control limits.
	+	Correlation coefficient for the method of standard additions (MSA) is less than 0.995.
	S	The reported value was determined by the MSA.

Volatile Organic Analysis for Groundwater Samples Decatur/Barding & Spawr Landfill							
Volatile Compound	Sample Locations and Number Concentrations in ug/L						
	GW01	GW02	GW03	GW04	GW05	GW06	GW08 Background
Chlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Styrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylene (total)	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Total Number of TICS *	0	0	1	0	0	0	0

* Number, not concentrations, of tentatively identified compounds (TICs).

gw-volat

Semi-volatile Organic Analysis for Groundwater Samples
Decatur/Barding & Spawr Landfill

Semi-volatile Compound	Sample Location and Number Concentrations in ug/L						
	GW01	GW02	GW03	GW04	GW05	GW06	GW08 Background
Phenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl)Ether	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)	10 UJ	10 U	10 UJ	10 UJ	10 UJ	10 U	10 U
4-Methylphenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U
n-Nitroso-Di-n-Propylamine	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)Methane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-Methylphenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclopentadiene	10 U	10 UJ	10 U	10 U	10 U	10 U	10 UJ
2,4,6-Trichlorophenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	25 U	25 U	25 U	25 U	25 U	25 U	25 U

Semi-volatile Organic Analysis for Groundwater Samples
Decatur/Barding & Spawr Landfill

Semi-volatile Compound	Sample Location and Number Concentrations in ug/L						
	GW01	GW02	GW03	GW04	GW05	GW06	GW08 Background
Butylbenzylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 UJ
Benzo(a)Anthracene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)Phthalate	10 UJB	10 UJB	10 UJB	10 UJB	10 UJB	10 UJB	10 U
di-n-Octyl Phthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)Fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)Fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)Pyrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)Pyrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)Anthracene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)Perylene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Total Number of TICs *	0	16	2	2	1	1	4

* Number, not concentration, of tentatively identified compounds (TICs).

gw-semiv

Pesticide/PCB Analysis for Groundwater Samples Decatur/Barding & Spawr Landfill							
Pesticide/ PCB	Sample Locations and Number Concentrations in ug/L						
	GW01	GW02	GW03	GW04	GW05	GW06	GW08 Background
Alpha-BHC	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 UJ	0.050 UJ
Beta-BHC	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 UJ	0.050 UJ
Delta-BHC	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 UJ	0.050 UJ
Gamma-BHC (Lindane)	0.050 U	0.11 P	0.050 U	0.050 U	0.050 U	0.050 UJ	0.050 UJ
Heptachlor	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 UJ	0.050 UJ
Aldrin	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 UJ	0.050 UJ
Heptachlor Epoxide	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 UJ	0.050 UJ
Endosulfan I	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 UJ	0.050 UJ
Dieldrin	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 UJ
4,4'-DDE	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 UJ
Endrin	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 UJ
Endosulfan II	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 UJ
4,4'-DDD	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 UJ
Endosulfan Sulfate	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 UJ
4,4'-DDT	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ	0.10 UJ
Methoxychlor	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 UJ
Endrin Ketone	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ
Endrin Aldehyde	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	0.10 UJ
Alpha-Chlordane	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 UJ
Gamma-Chlordane	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 UJ
Toxaphene	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ
Aroclor-1016	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ
Aroclor-1221	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 UJ
Aroclor-1232	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1242	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ
Aroclor-1248	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ
Aroclor-1254	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ
Aroclor-1960	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ

Volatile Organic Analysis for Sediment Samples Decatur/Barding & Spawr Landfill				
Volatile Compound	Sample Locations and Number Concentrations in ug/kg			
	ST01	ST02	ST03	ST04 Background
Chloromethane	12 U	14 U	24 U	43 U
Bromomethane	12 U	14 U	24 U	43 U
Vinyl Chloride	12 U	14 U	24 U	43 U
Chloroethane	12 UJ	14 UJ	24 UJ	43 UJ
Methylene Chloride	5 J	14 U	24 U	43 U
Acetone	12 UJB	25 UJB	35 UJ	200 JB
Carbon Disulfide	12 U	14 U	24 U	43 U
1,1-Dichloroethene	12 U	14 U	24 U	43 U
1,1-Dichloroethane	12 U	14 U	24 U	43 U
1,2-Dichloroethene (total)	12 U	14 U	24 U	43 U
Chloroform	12 U	14 U	24 U	43 U
1,2-Dichloroethane	12 U	14 U	24 U	43 U
2-Butanone	12 U	14 U	6 J	56
1,1,1-Trichloroethane	12 U	14 U	24 U	43 U
Carbon Tetrachloride	12 U	14 U	24 U	43 U
Bromodichloromethane	12 U	14 U	24 U	43 U
1,2-Dichloropropane	12 U	14 U	24 U	43 U
cis-1,3-Dichloropropene	12 U	14 U	24 U	43 U
Trichloroethene	12 U	14 U	24 U	43 U
Dibromochloromethane	12 U	14 U	24 U	43 U
1,1,2-Trichloroethane	12 U	14 U	24 U	43 U
Benzene	12 U	2 J	24 U	43 U
trans-1,3-Dichloropropene	12 U	14 U	24 U	43 U
Bromoform	12 U	14 U	24 U	43 U
4-Methyl-2-Pentanone	12 U	14 U	24 U	43 UJ
2-Hexanone	12 UJ	14 UJ	24 UJ	43 UJ
Tetrachloroethene	12 U	14 U	24 U	43 UJ
1,1,2,2-Tetrachloroethane	12 U	14 U	24 U	43 UJ
Toluene	12 U	14 U	24 U	43 UJ
Chlorobenzene	12 U	14 U	24 U	43 UJ
Ethylbenzene	12 U	14 U	24 U	43 UJ
Styrene	12 U	14 U	24 U	43 UJ
Xylene (total)	12 U	14 U	24 U	43 UJ
Total Number of TICS *	0	0	0	0

* Number, not concentrations, of tentatively identified compounds (TICs).

sed-vol

Semi-volatile Organic Analysis for Sediment Samples
Decatur/Barding & Spawr Landfill

Semi-volatile Compound	Sample Location and Number			
	Concentrations in ug/kg			
	ST01	ST02	ST03	ST04 Background
Hexachlorobenzene	390 U	450 U	800 U	1400 U
Pentachlorophenol	940 UJ	1100 UJ	2000 UJ	3500 UJ
Phenanthrene	390 U	450 U	150 J	210 J
Anthracene	390 U	450 U	800 U	1400 U
Carbazole	390 U	450 U	800 U	1400 U
di-n-Butylphthalate	390 U	450 U	800 U	1400 U
Fluoranthene	390 U	450 U	230 J	340 J
Pyrene	390 U	450 U	150 J	220 J
Butylbenzylphthalate	390 U	450 U	800 U	1400 U
3,3'-Dichlorobenzidine	390 U	450 U	800 U	1400 U
Benzo(a)Anthracene	390 U	450 U	67 J	120 J
Chrysene	390 U	450 U	90 J	150 J
bis(2-Ethylhexyl)Phthalate	390 UJB	450 UJB	800 UJB	1400 UJB
di-n-Octyl Phthalate	390 U	450 U	800 U	1400 U
Benzo(b)Fluoranthene	390 U	450 U	800 U	230 J
Benzo(k)Fluoranthene	390 U	450 U	800 U	1400 U
Benzo(a)Pyrene	390 U	450 U	800 U	1400 U
Indeno(1,2,3-cd)Pyrene	390 U	450 U	800 U	1400 U
Dibenzo(a,h)Anthracene	390 U	450 U	800 U	1400 U
Benzo(g,h,i)Perylene	390 U	450 U	800 U	1400 U
Total Number of TICs	8	18	20	21

sedum-sv

Semi-volatile Organic Analysis for Sediment Samples Tentatively Identified Compounds Decatur/Barding & Spawr Landfill Concentrations in ug/kg		
Compound Name	Retention Time	Estimated Concentration
Sample ST03 (Continued)		
Unknown Alkane	30.20	770 J
Unknown	31.60	690 J
Unknown	31.84	410 J
Sample ST04 Background		
2-Pentanone, 4-hydroxy-4-met	5.08	25000 UJNBA
Acetic acid, octyl ester	11.60	800 JN
Butanoic acid, octyl ester	13.86	2700 JN
Tetradecanoic acid	18.44	1000 JN
9-Hexadecenoic acid	19.56	6700 JN
Unknown hydrocarbon	19.62	2500 J
Hexadecanoic acid	19.71	8700 JN
Unknown hydrocarbon	21.17	8000 J
Unknown	21.22	5400 J
Unknown	22.93	5200 J
Unknown Alkane	25.05	2400 J
Unknown	25.75	3400 J
Unknown	26.00	1800 J
Unknown Alkane	26.40	12000 J
Unknown hydrocarbon	26.59	2600 J
Unknown Alkane	28.06	14000 J
Unknown	28.49	1600 J
Unknown	29.06	1800 J
Unknown	29.79	1100 J
Unknown Alkane	30.25	2700 J
Unknown	31.64	1600 J

tic-sed

Inorganic Analysis for Sediment Samples Decatur/Barding & Spawr Landfill				
Metals and Cyanide	Sample Locations and Number Concentrations in mg/kg			
	ST01	ST02	ST03	ST04 Background
Aluminum	2310 *	5130 *	6760 *	5290 *
Antimony	4.3 U	5.4 U	6.8 U	13.9 U
Arsenic	5.0 JN*+	14.1 JN*	49.3 JN*S	8.5 JN*
Barium	29.0 B	150	205	87.0 B
Beryllium	0.20 U	0.26 U	0.32 U	0.66 U
Cadmium	0.32 U	0.40 U	0.50 U	1.0 U
Calcium	51200	35500	48900	20200
Chromium	9.2	8.5 J	13.2 J	12.5 J
Cobalt	3.5 B	5.4 B	7.0 B	6.6 B
Copper	18.7 *	26.5 *	51.4 *	28.7 J*
Iron	16600 J*	29000 J*	35000 J*	12300 J*
Lead	8.5 JN	7.7 JN	30.9 JN	41.9 JN
Magnesium	17400 J*	11700 J*	10500 J*	7090 J*
Manganese	472 J*	265 J*	682 J*	747 J*
Mercury	0.06 U	0.07 U	0.16 B	0.17 U
Nickel	8.8 B	10.3 B	16.5	17.3 B
Potassium	503 B	1090 B	1430 B	1140 B
Selenium	0.72 UJNW	0.86 UJNW	1.0 UJNW	2.3 UJNW
Silver	1.0 U	2.3 B	1.6 U	3.4 U
Sodium	94.8 JB	116 B	398 B	334 B
Thallium	0.44 U	0.53 U	0.64 U	1.4 U
Vanadium	10.0 B	14.2 B	21.3	13.1 B
Zinc	35.3 *	33.3 *	239	92.4 *
Cyanide	0.58 U	0.72 U	0.84 U	1.9 U

sediment

Volatile Organic Analysis for Soil Samples Tentatively Identified Compounds Decatur/Barding & Spawr Landfill Concentrations in ug/kg		
Compound Name	Retention Time	Estimated Concentration
Sample SS01		
2-Tridecanone	20.87	15 JN
Sample SS04 Background		
alpha.-pinene	20.95	11 JN
1-Nonadecene	23.81	26 JN
Benzeneacetic acid, .alpha.,	24.12	34 JN

tic-vol

Semi-volatile Organic Analysis for Soil Samples
Decatur/Barding & Spawr Landfill

Semi-volatile Compound	Sample Location and Number			
	Concentrations in ug/kg			
	SS01	SS02	SS03	SS04 Background
Hexachlorobenzene	520 U	460 U	480 U	520 U
Pentachlorophenol	1200 U	1100 U	1200 U	1200 U
Phenanthrene	47 J	460 U	480 U	520 U
Anthracene	520 U	460 U	480 U	520 U
Carbazole	520 U	460 U	480 U	520 U
di-n-Butylphthalate	520 UJB	460 UJB	480 UJB	520 UJB
Fluoranthene	57 J	20 J	17 J	13 J
Pyrene	54 J	460 U	18 J	11 J
Butylbenzylphthalate	520 U	460 U	480 U	520 U
3,3'-Dichlorobenzidine	520 U	460 U	480 U	520 U
Benzo(a)Anthracene	30 J	460 U	480 U	520 U
Chrysene	30 J	460 U	480 U	520 U
bis(2-Ethylhexyl)Phthalate	220 J	120 J	34 J	27 J
di-n-Octyl Phthalate	520 U	460 U	480 U	520 U
Benzo(b)Fluoranthene	52 J	460 U	480 U	520 U
Benzo(k)Fluoranthene	520 U	460 U	480 U	520 U
Benzo(a)Pyrene	43 J	460 U	480 U	520 U
Indeno(1,2,3-cd)Pyrene	520 U	460 U	480 U	520 U
Dibenzo(a,h)Anthracene	520 U	460 U	480 U	520 U
Benzo(g,h,i)Perylene	520 U	460 U	480 U	520 U
Total Number of TICs	21	21	21	22

soil-sv

Semi-volatile Organic Analysis for Soil Samples Tentatively Identified Compounds Decatur/Barding & Spawr Landfill Concentrations in ug/kg		
Compound Name	Retention Time	Estimated Concentration
Sample SS03		
3-Penten-2-one, 4-methyl-	4.97	1100 JN
Unknown	5.52	200 J
Butane, 2,3-dichloro-2-methy	5.66	150 JN
Unknown	5.75	840 J
2-Pentanone, 4-hydroxy-4-met	6.50	36000 JNA
2-Hexen-1-ol, (Z) -	7.50	100 JN
Cyclohexanone	7.67	150 UJBN
Unknown	8.25	340 UJB
Unknown	15.48	120 J
Hexanedioic acid, dioctyl es	39.00	3400 UJBN
Unknown Alkane	43.20	120 J
(Z) 14- Tricosenyl formate	47.31	320 JN
Unknown	47.97	740 J
1-Hentetracontanol	4.00	800 JN
Unknown	49.64	640 J
Unknown	49.95	360 J
Unknown	50.15	360 J
Unknown	51.24	150 J
Stigmast-4-en-3-one	52.04	150 JN
Unknown	52.98	120 J
Unknown	53.48	240 J
Sample SS04		
Unknown	5.74	360 UJB
Dodecanamide, N,N-bis(2-hydr	29.05	280 JN
9, 12-Octadecadienoic acid (Z	31.77	240 JN
Hexanedioic acid, dioctyl es	35.59	3800 UJBN
1-Dotriacontanol	37.04	460 JN
Hexadecanal	38.88	420 JN
1-Dotriacontanol	39.71	4200 JN
Unknown Alkane	40.97	360 J
Unknown Alkane	42.19	4200 J
17-Octadecenal	43.78	1400 JN
Unknown Alkane	44.47	5200 J
Unknown	44.92	580 J
Unknown	45.54	340 J
Stigmasterol	45.92	580 JN
(Z) 14-Tricosenyl formate	46.02	920 JN
Unknown	46.61	4600 J
Nonacosanol	46.73	520 JN
Unknown	47.09	480 J
Unknown	47.48	560 J
Unknown	47.90	1200 J
Unknown	48.66	1800 J
Unknown	48.83	3600 J

nc-svol

Inorganic Analysis for Soil Samples Decatur/Barding & Spawr Landfill				
Metals and Cyanide	Sample Locations and Number Concentrations in mg/kg			
	SS01	SS02	SS03	SS04 Background
Aluminum	4760	3870	13100	3330
Antimony	11.6 UJN	12.3 UJN	12.1 UJN	12.6 UJN
Arsenic	5.1 JN	3.7 JN	7.1 JN	3.7 JN
Barium	39.3 B	32.9 B	92.0	72.0
Beryllium	1.2 U	1.2 U	1.2 U	1.3 U
Cadmium	1.2 U	1.2 U	1.2 U	1.3 U
Calcium	16400 J*	44400 J*	3190 J*	1740 J*
Chromium	7.3	6.4	17.7	4.9
Cobalt	5.3 B	3.2 B	9.5 B	6.7 B
Copper	11.7	9.5	18.4	6.4
Iron	10200	8820	22100	7050
Lead	28.9	16.1	20.9	27.6
Magnesium	7910 J*	15800 J*	4250 J*	844 JB*
Manganese	328 JN	260 JN	485 JN	816 JN
Mercury	0.12 U	0.12 U	0.12 U	0.13 U
Nickel	13.2	11.0	30.0	9.6 B
Potassium	804 B	833 B	2070	561 B
Selenium	0.46 UJN	0.49 UJN	0.48 UJN	0.51 UJN
Silver	2.3 UJN	2.5 UJN	2.4 UJN	2.5 UJN
Sodium	231 U	247 U	242 U	253 U
Thallium	0.46 UJNW	0.49 UJN	0.48 UJN	0.51 UJNW
Vanadium	11.7	9.3 B	25.8	9.9 B
Zinc	42.6	37.8	77.7	36.3
Cyanide	0.17 U	0.19 U	0.18 U	0.19 U

soilmet

APPENDIX F

WELL LOGS

White Copy - Ill. Dept. of Public Health
Yellow Copy - Well Contractor
Blue Copy - Well Owner

INSTRUCTIONS TO WELLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

05841905
Sic?

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

1. Type of Well

- a. Dug ☐ Bored ☐ Hole Diam. in. Depth ft.
Curb material Buried Slab: Yes ☐ No ☐
- b. Driven ☐ Drive Pipe Diam. in. Depth ft.
- c. Drilled ☒ Finished in Drift ☒ In Rock ☐
Tubular ☒ Gravel Packed ☐
- d. Grout: ☐

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:

Building 1000 Ft. Seepage Tile Field ☐
Cess Pool ☐ Sewer (non Cast iron) ☐
Privy ☐ Sewer (Cast iron) ☐
Septic Tank 1000 Barnyard ☐
Leaching Pit ☐ Manure Pile ☐

3. Well furnishes water for human consumption? Yes ☐ No ☒
4. Date well completed Sept 30-1982
5. Permanent Pump Installed? Yes ☐ Date No ☒
Manufacturer Type Location
Capacity gpm. Depth of Setting Ft.
6. Well Top Sealed? Yes ☒ No ☐ Type
7. Pitless Adapter Installed? Yes ☐ No ☒
Manufacturer Model Number
How attached to casing?
8. Well Disinfected? Yes ☐ No ☒
9. Pump and Equipment Disinfected? Yes ☐ No ☐
10. Pressure Tank Size gal. Type
Location
11. Water Sample Submitted? Yes ☐ No ☒

REMARKS:

GEOLOGICAL AND WATER SURVEYS WELL RECORD

Sanitary Dist of Decatur

10. Property owner BGM Associates Well No. 1
Address 1999 W. Grand - Decatur - Ill.
Driller BE Mashburn License No. 92-520
11. Permit No. 105134 Date Oct 6-82
12. Water from Sand & Gravel 13. County Macou
at depth 12 to 38 ft. X Sec. 24
14. Screen: Diam. 6 in. Twp. 16N
Length: 8 ft. Slot 12+15 Rge. 1E
4' - 4' Elev.

15. Casing and Liner Pipe

Diam. (In.)	Kind and Weight	From (Ft.)	To (Ft.)
<u>6"</u>	<u>Plastic</u>	<u>+1</u>	<u>30</u>

SHOW LOCATION IN SECTION PLAT
390'S 115'W NE/4
SE SE NE
(industrial)

16. Size Hole below casing: 6 in.
17. Static level 9 ft. below casing top which is 1 ft. above ground level. Pumping level 13 ft. when pumping at 100 gpm for 4 hours. Recovery 30 seconds

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
<u>brown Clay</u>	<u>12</u>	<u>12</u>
<u>Sand & Gravel</u>	<u>26</u>	<u>38</u>

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Bruce Mashburn DATE Jan 28-83

INSTRUCTION DRILLERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH
WELL CONSTRUCTION REPORT

1. Type of Well

- a. Dug ☐ Bored ☒ Hole Diam. 44 in. Depth 56 ft.
Curb material ☐ Buried Slab: Yes ☐ No ☐
b. Driven ☐ Drive Pipe Diam. ☐ in. Depth ☐ ft.
c. Drilled ☐ Finished in Drift ☐ In Rock ☐
Tubular ☐ Gravel Packed ☒
d. Grout:

(KIND)	FROM (FT.)	TO (FT.)

2. Distance to Nearest:

- Building ☐ Ft. Seepage Tile Field ☐
Cess Pool ☐ Sewer (non Cast Iron) ☐
Privy ☐ Sewer (Cast Iron) ☐
Septic Tank ☐ Barnyard ☐
Leaching Pit ☐ Manure Pile ☐

3. Well furnishes water for human consumption? Yes ☐ No ☐

4. Date well completed ☐

5. Permanent Pump Installed? Yes ☐ Date ☐ No ☐

- Manufacturer ☐ Type ☐ Location ☐
Capacity ☐ gpm. Depth of Setting ☐ Ft.

6. Well Top Sealed? Yes ☒ No ☐ Type ☐

7. Pitless Adapter Installed? Yes ☐ No ☐

- Manufacturer Baker Model Number ☐
How attached to casing? Clamp

8. Well Disinfected? Yes ☐ No ☐

9. Pump and Equipment Disinfected? Yes ☐ No ☐

10. Pressure Tank Size ☐ gal. Type ☐
Location ☐

11. Water Sample Submitted? Yes ☐ No ☐

REMARKS:

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner August Z. Boughton Well No. ☐

Address 432 Jackson St. Springfield, Ill.

Driller John C. Campbell License No. 92608

11. Permit No. 13086 Date 12/22/78

12. Water from Sand & Gravel 13. County Macoupin

at depth 32 to 56 ft.

14. Screen: Diam. ☐ in.

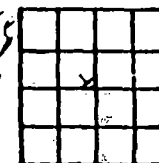
Length: ☐ ft. Slot ☐

Sec. 24

Twp. 16N

Rge. 1E

Elev. ☐



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
<u>12"</u>	<u>Plastic</u>	<u>1</u>	<u>14</u>
<u>36"</u>	<u>Concrete</u>	<u>14</u>	<u>56</u>

SHOW LOCATION IN SECTION PLAT
SE SE NW

16. Size Hole below casing: ☐ in.

17. Static level ☐ ft. below casing top which is ☐ ft. above ground level. Pumping level ☐ ft. when pumping at ☐ gpm for ☐ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
<u>Top Soil</u>	<u>0-3'</u>	
<u>Yellow Clay</u>	<u>1'</u>	
<u>Gravel</u>	<u>28'</u>	
<u>Sand & Gravel</u>	<u>32'</u>	
<u>Blue Clay</u>	<u>46'</u>	
<u>Sand & Gravel</u>	<u>49'</u>	
<u>Blue Clay</u>	<u>56'</u>	

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED John C. Campbell DATE 12/26/78

White Copy -
Ill. Dep. of Public Health
Yellow Copy - Well Contractor
Blue Copy - Well Owner

INSTRUCTIONS TO WELL OWNERS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE
DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST
JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER
SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

1. Type of Well

- a. Dug ☐ Bored ☒ Hole Diam. 44 in. Depth 36 ft.
Curb material concrete Burled Slab: Yes ☒ No ☐
b. Driven ☐ Drive Pipe Diam. ☐ in. Depth ☐ ft.
c. Drilled ☐ Finished in Drift ☐ In Rock ☐
Tubular ☐ Gravel Packed ☐
d. Grout:

(KIND)	FROM (FT.)	TO (FT.)

2. Distance to Nearest:

Building ☐ Ft. Seepage Tile Field ☐
Cess Pool ☐ Sewer (non Cast iron) ☐
Privy ☐ Sewer (Cast iron) ☐
Septic Tank ☐ Barnyard ☐
Leaching Pit ☐ Manure Pile ☐

3. Well furnishes water for human consumption? Yes ☒ No ☐

4. Date well completed 6-28-85

5. Permanent Pump Installed? Yes ☐ Date ☐ No ☒

Manufacturer ☐ Type ☐ Location ☐

Capacity ☐ gpm. Depth of Setting ☐ Ft.

6. Well Top Sealed? Yes ☒ No ☐ Type ☐

7. Pitless Adapter Installed? Yes ☐ No ☒

Manufacturer ☐ Model Number ☐

How attached to casing? ☐

8. Well Disinfected? Yes ☐ No ☒

9. Pump and Equipment Disinfected? Yes ☐ No ☒

10. Pressure Tank Size ☐ gal. Type ☐
Location ☐

11. Water Sample Submitted? Yes ☐ No ☒

REMARKS:

new court - County 21866
no bldg yet.

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Paul, Mac Kinney Well No. ☐

Address Deerfield

Driller Smith License No. 72-607

11. Permit No. 118784 Date 6-18-85

12. Water from formation 13. County Macoupin

at depth 20 to 32 ft.

14. Screen: Diam. ☐ in.

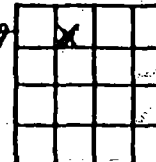
Length: ☐ ft. Slot ☐

Sec. 24

Twp. 16N

Rge. 1E

Elev. ☐



15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
<u>6</u>	<u>plastic</u>		<u>10</u>
<u>36</u>	<u>concrete</u>		<u>36</u>

SHOW
LOCATION IN
SECTION PLAT
SW NE NW

16. Size Hole below casing: ☐ in.

17. Static level ☐ ft. below casing top which is ☐ ft.
above ground level. Pumping level ☐ ft. when pumping at ☐
gpm for ☐ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
<u>Clay</u>		<u>12</u>
<u>finely yellow clay</u>		<u>20</u>
<u>gravel & gray clay mix</u>		<u>32</u>
<u>gray clay</u>		<u>36</u>

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGN Harold L. L.

DATE 6-28-85

White Copy -
Ill. Dept. of Pub. Health
Yellow Copy - Well Contractor
Blue Copy - Well Owner

INSTRUCTIONS TO WELLERS

FILL IN ALL PERTINENT INFORMATION REQUIRED AND MAIL ORIGINAL TO STATE
DEPARTMENT OF PUBLIC HEALTH, HEALTH PROTECTION, ENVIRONMENTAL HEALTH, 525
WEST JEFFERSON, SPRINGFIELD, ILLINOIS 62761. DO NOT DETACH GEOLOGICAL/WATER
SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

1. Type of Well

- a. Dug ☒ Bored ☒ Hole Diam. 26 in. Depth 73 ft.
Curb material live Burled Slab: Yes ☒ No ☐
b. Driven ☐ Drive Pipe Diam. ☐ in. Depth ☐ ft.
c. Drilled ☐ Finished in Drift ☐ In Rock ☐
Tubular ☐ Gravel Packed ☒
d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:

Building 100 Ft. Seepage Tile Field ☐
Cess Pool ☐ Sewer (non Cast Iron) ☐
Privy ☐ Sewer (Cast Iron) ☐
Septic Tank 92 Barnyard ☐
Leaching Pit ☐ Manure Pile ☐

3. Well furnishes water for human consumption? Yes ☐ No ☐

4. Date well completed 6-8-88

5. Permanent Pump Installed? Yes ☐ Date ☐ No ☐

Manufacturer ☐ Type ☐ Location ☐

Capacity ☐ gpm. Depth of Setting ☐ Ft.

6. Well Top Sealed? Yes ☒ No ☐ Type Burled Slab

7. Pitless Adapter Installed? Yes ☐ No ☐

Manufacturer ☐ Model Number ☐

How attached to casing? ☐

8. Well Disinfected? Yes ☐ No ☒

9. Pump and Equipment Disinfected? Yes ☐ No ☐

10. Pressure Tank Size ☐ gal. Type ☐

Location ☐

11. Water Sample Submitted? Yes ☐ No ☒

REMARKS:

Co # 22041

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner John Rakutson Well No. ☐

Address Lincoln

Driller Joe Suggs License No. 004200315

11. Permit No. 003126 Date 6-8-88

12. Water from ☐ Formation ☐ 13. County Monroe

at depth 28 to 40 ft. Sec. 244

14. Screen: Diam. ☐ in. Twp. 16N

Length: ☐ ft. Slot ☐ Rge. 1E

Elev. ☐

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
<u>6</u>	<u>Sch 21</u>	<u>0</u>	<u>10</u>
<u>36</u>		<u>10</u>	<u>73</u>

SHOW
LOCATION IN
SECTION PLAT

NW NW NE

16. Size Hole below casing: ☐ in.

17. Static level ☐ ft. below casing top which is ☐ ft.
above ground level. Pumping level ☐ ft. when pumping at ☐
gpm for ☐ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
<u>Top Soil</u>	<u>4</u>	
<u>Gravelly clay</u>	<u>28</u>	
<u>Sand and gravel</u>	<u>15</u>	
<u>Drill Pit</u>	<u>26</u>	

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Harold L. Lintell DATE Aug 9-88

White Copy -
Ill. Dep. of Public Health
Yellow Copy - Well Contractor
Blue Copy - Well Owner

INSTRUCTIONS TO L. HS

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE DEPARTMENT OF PUBLIC HEALTH, CONSUMER HEALTH PROTECTION, 535 WEST JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

GEOLOGICAL AND WATER SURVEYS WELL RECORD

1. Type of Well

- a. Dug ☐ Bored ☒ Hole Diam. 4 1/4 in. Depth 73 ft.
Curb material ☐ Buried Slab: Yes ☒ No ☐
b. Driven ☐ Drive Pipe Diam. ☐ in. Depth ☐ ft.
c. Drilled ☐ Finished in Drift ☐ In Rock ☐
Tubular ☐ Gravel Packed ☒
d. Grout:

(KIND)	FROM (FT.)	TO (FT.)

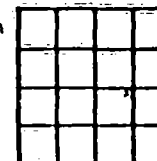
2. Distance to Nearest:

Building ☐ Ft. Seepage Tile Field ☐
Cess Pool ☐ Sewer (non Cast iron) ☐
Privy ☐ Sewer (Cast Iron) ☐
Septic Tank ☐ Barnyard ☐
Leaching Pit ☐ Manure Pile ☐

3. Well furnishes water for human consumption? Yes ☒ No ☐
4. Date well completed June 27, 1979
5. Permanent Pump Installed? Yes ☒ Date 7/79 - BY CUSTOMER
Manufacturer Valley Type 1/2 HP Location well
Capacity 12 gpm. Depth of Setting 52 Ft.
6. Well Top Sealed? Yes ☒ No ☐ Type ☐
7. Pitless Adapter Installed? Yes ☒ No ☐
Manufacturer Baker Model Number ☐
How attached to casing? Clamp
8. Well Disinfected? Yes ☐ No ☐
9. Pump and Equipment Disinfected? Yes ☐ No ☐
10. Pressure Tank Size 42 gal. Type Well-x-Trol
Location house
11. Water Sample Submitted? Yes ☐ No ☐

REMARKS:

10. Property owner Mr. Steve Edwards Well No. ☐
Address R.R. 8 Box 399A Decatur, IL 62526
Driller Joseph R. Reynolds License No. 92-601
11. Permit No. 87194 Date June 27, 1979
12. Water from Glacial Drift 13. County Nacon
at depth 40 to 73 ft. Sec. 25
14. Screen: Diam. ☐ in. Twp. 16N
Length: ☐ ft. Slot ☐ Rge. 1E
Elev. ☐



SHOW
LOCATION IN
SECTION PLAT
NE NW SE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
10	Plastic	+1	-17
36	Concrete	-17	-60
24	Concrete	-60	-73

16. Size Hole below casing: ☐ in.
17. Static level ☐ ft. below casing top which is ☐ ft.
above ground level. Pumping level ☐ ft. when pumping at ☐
gpm for ☐ hours.

18. FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Top Soil	0-3'	
Hard Pan	20'	
Glacial Drift	38'	
Sand	42'	
Glacial Drift	55'	
Sand	60'	
<u>Sand</u>	<u>73'</u>	

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Joseph R. Reynolds DATE June 28, 1979

FILL IN ALL PERTINENT INFORMATION REQUESTED AND MAIL ORIGINAL TO STATE
 DEPARTMENT OF PUBLIC HEALTH, SUMMER HEALTH PROTECTION, 535 WEST
 JEFFERSON, SPRINGFIELD, ILLINOIS, 62761. DO NOT DETACH GEOLOGICAL/WATER
 SURVEYS SECTION. BE SURE TO PROVIDE PROPER WELL LOCATION.

ILLINOIS DEPARTMENT OF PUBLIC HEALTH WELL CONSTRUCTION REPORT

1. Type of Well

- a. Dug ☒ Bored ☒ Hole Diam. 43 in. Depth 40 ft.
 Curb material Buried Slab: Yes ☒ No ☐
 b. Driven ☐ Drive Pipe Diam. in. Depth ft.
 c. Drilled ☐ Finished in Drift ☒ In Rock ☐
 Tubular ☐ Gravel Packed ☒

d. Grout:

(KIND)	FROM (Ft.)	TO (Ft.)

2. Distance to Nearest:

- Building 100 Ft. Seepage Tile Field
 Cess Pool Sewer (non Cast Iron)
 Privy Sewer (Cast iron)
 Septic Tank Barnyard
 Leaching Pit Manure Pile

3. Well furnishes water for human consumption? Yes ☒ No ☐

4. Date well completed 9-79

5. Permanent Pump Installed? Yes ☒ Date 9-79 No ☐

Manufacturer Edw Type sub Location well
 Capacity 10 gpm. Depth of Setting 35 Ft.

6. Well Top Sealed? Yes ☒ No ☐ Type

7. Pitless Adapter Installed? Yes ☒ No ☐

Manufacturer Baker Model Number 6"
 How attached to casing? Bolt

8. Well Disinfected? Yes ☒ No ☐

9. Pump and Equipment Disinfected? Yes ☒ No ☐

10. Pressure Tank Size 22.43 gal. Type gstr.

Location Mount

11. Water Sample Submitted? Yes ☐ No ☐

REMARKS:

GEOLOGICAL AND WATER SURVEYS WELL RECORD

10. Property owner Elmer Witty Well No.

Address RR 8 Depue St

Driller Des Coats License No. 102-15

11. Permit No. 89495 Date 9-79

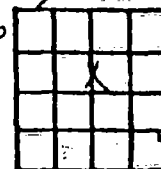
12. Water from Clay 13. County Macou

at depth 12 to 18 ft.

14. Screen: Diam. in. Sec. 24

Length: ft. Slot Twp. 16N

Elev. Rge. 1E



SHOW
 LOCATION IN
 SECTION PLAT
 NE SE SE

15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
<u>6</u>	<u>PVC</u>	<u>0</u>	<u>14</u>
<u>36</u>	<u>Concrete</u>	<u>14</u>	<u>40</u>

16. Size Hole below casing: in.

17. Static level ft. below casing top which is ft. above ground level. Pumping level ft. when pumping at gpm for hours.

18. FORMATIONS I SED THROUGH	THICKNESS	DEPTH OF BOTTOM
<u>top soil</u>	<u>1</u>	<u>1</u>
<u>clay</u>	<u>7</u>	<u>8</u>
<u>Drift</u>	<u>9</u>	<u>17</u>
<u>shandy clay</u>	<u>1</u>	<u>18</u>
<u>Drift</u>	<u>22</u>	<u>40</u>

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED George E. Andz. DATE 9/79

FILE COPY